FAMILY IMPACT ON ASIAN AMERICAN'S CAREER CHOICE

BY

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DISSERTATION

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Abstract

Based on census data, Asian Americans are overrepresented in some occupations (e.g. science, professional, and technology) while being underrepresented in others (e.g., production, entertaining, social and humanistic field). Recent scholarship shows that vocational interests are less related to Asian American's career choice. Asian American might choose their career based on their family's mission rather on their own interests, which may lead to occupational incongruence. Family influence on Asian Americans' career development and career choice has been less studied, despite acknowledgements of its importance. What are good indicators for family influence and how these indicators separately (or as a whole) impact Asian Americans are still unclear. Based on literatures, three cultural specific indicators (intergeneration conflict, family obligation, and perceived opportunities) were chosen for further examination. The purpose of the present study was to provide empirical evidence on how these three variables impact Asian American young adults' career choice and occupational congruence. The present study was also aimed at examining the current pattern of occupational segregation among Asian Americans. 249 Asian Americans completed a questionnaire regarding their career choice and family influence. The results indicated that intergenerational conflicts and perceived opportunity was negatively associated with interest-choice congruence, and they functioned as a barrier to career choice. Family obligation, instead, functioned as a positive contributing factor to interest-choice congruence. In addition, participants' reported majors and preferred occupations were coded into RIASEC categories. The patterns of selected majors and preferred occupations reflected occupational segregation.

Interest-choice congruence was significantly higher in atypically represented majors (Artistic, Social major) than in traditionally over represented majors (Realistic, Investigative, and Enterprising major). These findings provided evidence for Relative Functionalism proposed by Sue and Okazaki (1990). Finally, significant results were found for congruence and its correlation with family variables across acculturation, generation status, RIASEC major/occupation, gender, and parents' education. The meaning of these research findings to occupational segregation and other considerations were discussed.

To my son Jaden
To Yizhou
To my mother Xueying Li and my father Yongxin Qin

Deepest thank to my advisor James Rounds for his support, trust, and help
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Table of Contents

List of Tables

List of Figures

Chapter I

Introduction

Prelude

Based on census data, Asian Americans are overrepresented in some occupations (e.g. science, professional, and technology) while being underrepresented in others (e.g., production, entertaining, social and humanistic field) (Leong & Hardin, 2002; Leong & Gupta, 2007; Fouad, Kantamneni, Smothers, Chen, Fitzpatrick, & Terry, 2008; Tang, Fouad, & Smith, 1999). Fouad et al. (2008) cited the U.S. Bureau of the Census data in 2007 and summarized that although Asian American comprise only 4% of US population they represent 25% of computer engineers, 30% of medical scientists, 17% of physicians, and 14% of dentists, but only 1% of social service workers. Major career development theories (e.g., Holland theory of personality types and work environments, social cognitive career theory) assumed that vocational interests are the primary factors in determining career choice (Holland, 1997), which lead the traditional research on Asian Americans' career choice focusing on vocational interest (e.g., Day & Rounds, 1998). Nevertheless, recent scholarship shows that vocational interests are less related to Asian American's career choice (Leong & Gupta, 2007; Leong & Hardin, 2002). Asian American might choose their career based on their family's mission rather on their own interests (e.g., Leong, 1998; Leong & Gupta, 2007; Tang et al., 1999). Tang et al. (1999) examined the relationship between individual's vocational interests, self-efficacy, family background, and acculturation with career choice among 187 Asian American college

students. Their results indicated that interests were not related to Asian American's career choice but self-efficacy, family background, and acculturation did impact career choice. Tang's et al. (1999) results were replicated with a more homogeneous sample of South Asian American students (Castelino, 2005). Castelino, in his dissertation, replicated Tang et al.'s study and asserted that interest was not related to South Asian American students' career choice but family factors were related.

The purpose of the present study is to provide research to further explore family variables and their impacts on Asian American students' career choice. The outcome of choosing certain occupations rather than others was measured by the congruence between students' interest and actual career choice. Examining the interest-choice congruence and understanding more about contributing factors will help career counselors explore other avenues with Asian American clients given that the traditional way of suggesting career options based on matching individual interest with occupational environment may not be appropriate for Asian American clients.

Occupation Segregation

Occupation segregation in Asian American population has long been documented. An early study (Sue & Kirk, 1972, cited in Leong & Serafica, 1995) of Chinese-American first-year college students at University of California, Berkeley, showed that compared to other freshmen, Asian Americans expressed more interest in physical sciences, applied technical fields, and business occupations and less interest in social sciences, aesthetic cultural field, and verbal linguistic vocations. Similar patterns were

observed from other studies. For example, Hsia (1988) analyzed the data from nine major occupational groupings and found that compared to Euro-Americans Asian Americans were more likely to be in three areas: professional (18% vs. 12.8%), technical (5.5% vs. 3.1%), and service (15.6% vs. 11.6%). In contrast, fewer Asian Americans than Euro-Americans were observed in three areas: sales (8.4% vs. 10.7%), production/craft (8.4% vs. 13.4%), and operator/laborer (14.2% vs. 17.1%). As a benchmark study, Tang et al. (1999) drew data from eight major universities in the eastern and Midwestern areas of the United State. Among 187 students, 33.3% Asian American students were in science, 23.0% in business, 13.7% in social sciences, 5.9% in art, and 5.6% in others.

National wide studies also provided evidence for this trend of occupation segregation. Leung, Ivey, and Suzuki (1994) in their study cited a survey conducted by the National Science Foundation and National Research Council in 1989 with earned doctorates by United States citizens. They reported that 28% of the doctoral degrees awarded to Asian Americans were in engineering, 20% were in agricultural or biological sciences, 12% were in physical sciences, and 3% were in computer and information sciences. The census 2000 (Occupations: 2000) data further indicated that 44.6% of Asian American labor of force chose to pursue Management, Professional, and related occupations compared to European/White Americans (35.6%) or other racial minority populations (e.g., African American, 25.2%; Hispanic or Latino, 18.1%) and quite above the average percentage among the total labor of force (33.6%). Therefore, the census 2000 concluded that “Asians and non-Hispanic Whites (who reported no other race) were

more often in management, professional, and related occupations than people reporting other races".

All above sources highlighted three points. First, science, technical, and professional occupations are overly represented by Asian Americans. Second, business or enterprising occupations have gradually increased the numbers of Asian Americans, although early data indicated that sales related occupations had a smaller representation of Asian Americans. Third, services occupations were overrepresented by Asian Americans in early years, but social science occupations were avoided by Asian Americans. Leung et al. (1994) documented that only 5% of earned doctorates national wide were in social science. They further argued that Asian Americans as a group may prefer structured, logical, concrete, and impersonal occupations but not occupations that require interpersonal interaction, and verbal or written expression/communication. Leong and Gupta (2007) argued that some personality traits observed in Asian Americans may contribute to such choice. They listed social anxiety and intolerance of ambiguity as contributors to under-representation in social science area. However, more recent studies showed some signs that compared to data prior to 1990s Asian Americans are more willing to choose social science as their majors/occupations. The present study was aimed at exploring whether the pattern of occupation segregation continues to demonstrate a similar pattern in nowadays or it has already changed. Getting a clearer picture of current pattern of occupation segregation would also help to understand the occupational congruence/incongruence that observed in Asian Americans.

Occupational Congruence

Congruence in vocational psychology is defined as a match between one's needs/desire and situation rewards/supplies (Tinsley, 2000). Spokane, Meir, and Catelano (2000) summarized a decade's congruence literature from 1985-1999. They categorized congruence as a concept into: *occupational congruence* (match between individual's interest/personality and occupational choice), *environmental congruence* (match between one's personality and other individuals' personalities within the same environment), *skill utilization congruence* (match between one's skills and job requirements), *aspect-based congruence* (match between aspects of occupational characteristics and worker's preference of those aspects), *within occupation congruence* (match calculated in a specific occupation), and *avocational congruence* (match between one's leisure activities and personality type). The present study focused on occupational congruence. Thus, the word "congruence" or "incongruence" used in the present research referred to occupational congruence, if it is not specifically noted.

Most previous studies of occupational congruence have focused on identifying relations between occupational congruence and outcome variables such as job satisfaction, job preference, job stability, and well-being (Hutchinson, 2000; Meir, 1995; Tinsley, 2000; Spokane et al., 2000). There were few studies examining cultural variables and congruence (Spokane et al., 2000). Spokane et al. (2000) reported only one study on Asian-cultural investigation of congruence, the study conducted by Tanaka and Ogawa (1986) on examining person-environment fit among 117 retired teachers. Tanaka and Ogawa (1986) examined the correlation between within occupation congruence

(congruence calculated within all teachers) and a general satisfaction with employment. They reported that within occupation congruence was not significantly related to satisfaction. Spokane et al. (2000) concluded that "we still have relatively little (cross-cultural data) upon which to base any firm conclusions in this area" (p.174).

Since Spokane et al (2000)'s summary few studies have examined congruence and cultural factors. Most of congruence literature continued paying attention to the association between congruence and a certain outcome variable, such as career choice certainty (Tracey, in press), satisfaction (Meir & Melamed, 2005), work performance (Tziner, Meir, & Segal, 2002), and wellbeing (Lachter & Meir, 2004). One of few studies on cultural factors and congruence was conducted by Gupta and Tracey (2005). They compared interest-choice congruence between 83 Asian Indian and 107 White/European American students, and concluded that Asian Indians students evidenced less congruence than White counterparts due to their adherence to Dharma culture in which family duty is greatly expected. These results suggest that culture factors plays a role influencing ethnic minority's occupational congruence, and family duty is one of important culture factors for Asian Indian Americans.

Understanding Asian Americans' patterns of occupational congruence (or incongruence) with career choice is important since vocational psychologists may develop a better understanding of Asian American population and career counselors could gain more insights on Asian American clients' possible concerns/struggles. As noted above, Asian Americans may choose their career based on family's mission rather than their personal interest (Leong, 1998; Tang et al., 1999). Asian families, especially

immigrant families, feel the pressure to immerse into mainstream society by expecting their children to choose well paid occupations (Chung & Bemak, 2007). Asian American students report feeling torn when selecting a career based on their personal choice rather than on parents' academic expectation (Inman & Yeh, 2007; Ma & Yeh, 2005; Okubo, Yeh, Lin, Fujita, & Shea, 2007; Sung, 1985). Asian American students are more likely to choose majors and occupations to satisfy their parents, despite their inclination to work in different fields. Therefore, I expect that Asian American students present a low to moderate level of interest-choice congruence. In addition, I hypothesized that Asian American students' interest-choice congruence varies across majors. Asian American students in more traditionally represented areas (e.g., Engineering) may have lower interest-choice congruence compared to students in more atypically represented areas (e.g., arts, psychology) who may have higher occupational congruence.

Family Influence on Occupational Congruence

Asian families have been considered as collective in orientation, emphasizing interdependency and the priority of social obligations and duties over individual desires (Ho, 1994; U.Kim & Choi, 1994; Triandis, Bontempo, Villareal, Asai, & lucca, 1988; cited in Okagaki & Bojczyk, 2002; Yee et al., 2007). Family factors have long been considered as influential variables in many aspects of Asian Americans' life (Chung, 2001; Sue & Sue, 2003), such as mental well beings (Inman & Yeh, 2007), academic achievement (Slaughter-Defoe et al. 1990; Sue & Okazaki, 1990; Tseng, Chao, & Padmawidjaja, 2007), and career decision making (Ferry, Fouad, & Smith, 2000; Okubo,

Yeh, Lin, Fujita & Shea, 2007). It is believed that family has a strong influence on career choices of Asian Americans (Leong & Chou, 1994; Leong & Gupta, 2007; Yee et al. 2007).

> From a younger family member's perspective, Leong & Chou (1994) stated that
>
> Career choice and career advancement may be seen more as a means of providing for one's own family, helping ones siblings, and fulfilling one's responsibility to care for parents in their old age than as ways of implementing self attributes (p.140).

From a parent's perspective, continuous monitoring, training, and guiding children is essential part of being an Asian parent (Okagaki & Bojczyk, 2002). Scholars (Chao & Tseng, 2002; Yee et al., 2007) argued that in Asian family systems intensive guidance and restrict training of one's children is perceived as an expression of parental concern, duty, and love. If one does not heavily involved in making decisions for one's children, s/he may even be considered as not taking good responsibility to be a parent in Asian culture. All above literature supported that parents' impact on Asian American's career choice is highly valued in Asian families.

Despite acknowledgments of its importance, family impact on Asian Americans' career development and career choice has been less studied compared to studies on other areas (e.g., well being, academic achievements). Few empirical studies have been conducted in this area (Whiston & Keller, 2004), which has led to repeated calls for more research addressing family impact on Asian American's career issues (Leong & Serafica, 1995; Leong & Hardin, 2002; Leong & Gupta, 2007). Regardless of a small amount of empirical studies, scholars (e.g., Tang et al., 1999; Gupta & Tracey, 2005; Yee,

DeBaryshe, Yuen, Kim, & McCubbin, 2007) have agreed that family does greatly impact Asian Americans' career choice, but in what way and to what extent does family play a role is still unclear. No consensus has been reached on what are good indicators for family influence and how these indicators separately (or as a whole) impact Asian Americans' career choice.

Previous studies have examined different indicators of family influence. For example, Tang et al. (1999) selected parents' involvement as an indicator for family influence. They measured parents' involvement by asking eight questions on a five-point scale, such as "How often have your parents or any family members discussed your career plans with you?", "Have your parents asked you to carry on the family tradition?", "How much do they listen to your opinion about career plans?", "Have your parents pressured you to take a job that is financially secure?", "Have your parents forced you to follow their choice of occupations for you?", "Have your parents provided you only the information of the job that they want you to pursue?", "Have they compared you with others who are successful in certain occupations?" (Tang, 1999, p.147). A path analysis yielded complex results indicating that family's involvement significantly impacted career choice although it did not impact interest. It is notable that family's involvement was defined as a broad concept in Tang et al.'s study. The eight items were very diverse, ranging from the frequency of family discussion of career related topics to values that family may reinforce onto next generation. The reported reliability among these items was low ($\alpha = .59$). Tang et al. further called for more study on family variables and stated that "A valid instrument to measure family background variables is also needed" (p.154).

Another study conducted by Ferry, Fouad & Smith (2000) examined the role of family context in a Social Cognitive Model for career related choice behaviors within math and science area. In an effort of identifying familial variables, they broke down family influence into several different components. The final chosen familial variables included role modeling, parental expectation, parental encouragement, parenting style, socioeconomic status, parental math/science proficiency, and family relationship. They examined 791 undergraduate students enrolled in psychology classes at two universities. After a path analysis, they concluded that six out of seven familial variables did not yield significant paths. Only parental encouragement as a familial variable was found to significantly influence learning experience. It is notable that the participants in this study were dominantly White/European American (85%) and Asian American only represent 4% of the sample. However, this study was a clear effort to break down familial factors into more concrete variables.

Choosing indicators for familial variables has continued to be a theoretical and practical concern for research. More recent studies started to identify a few concrete variables. Lee (2009) in her dissertation examined factors that influence career choice among Asian American social workers. Lee chose family immigration status as a familial variable. With a total of 370 Asian American social workers that participated in the study, Lee concluded that family immigration status significantly impacted the perception of career barriers, which in turn impacted the choice of being a social worker. Barcebal (2009) explored acculturation, emotion, and career choice in Filipino American women

and concluded that no statistical significant differences were found across generation status on the frequency of choosing certain career field.

A recent qualitative study conducted by Fouad, Kantamneni, Smothers, Chen, Fitzpatrick, and Terry (2008) shed some lights on a systematic way of looking at family influence on career choice. Fouad et al. (2008) interviewed 12 Asian Americans who were in the workforce and employed for at least five years. They summarized seven domains that influence Asian American's career decision making, among which family is the top domain they listed. The rest of six domains were cultural influence, external influence, career goals, role models, work values, and self-identity. Within family domain, they further listed four sub-areas: family expectation, support by family, family obligation, cultural expectations of roles. In their cultural influence domain, perceived opportunity and gender are two of sub-areas. They further argued that family and culture were the only domains that all participants agreed on as the influencing their career choices.

The present study selected family obligation from the family domain and perceived opportunity from cultural domain for further examination. In addition, intergeneration conflict was also chosen as one of family factors to be further examined because Asian Americans are highly interdependent and family is the key place where values of interdependency are practiced and maintained. The relationship between parents and children relates to Asian fundamental values. Intergeneration conflict (one format of intergeneration relationship) was suggested to be an influential factor that impacting different aspect of Asian American's life.

Family Obligations

Family obligation is one of core values that is emphasized in Asian culture (Yee et al., 2007). Family obligation relates to Confucian ethics, a perspective that emphasizes obligation to others rather than individual rights, and a fundamental factor that impacts family dynamic in China, Japan, and Korea (Okagaki & Bojczyk, 2002). It is believed that the family interests take precedence over individual member's interests, and children of the family are expected to obey elders and participate in maintaining the household (Fuligni, Yip, & Tseng, 2002). Yee et al. (2007) further argued that family obligation includes both attitudinal and behavioral responsibilities, in which children are expected to show respect and affection for older family members, seek elder's advice and accept their decision, and keep up with needed assistance to family and emotional ties with elders throughout their life.

The importance of family obligations perceived by Asian Americans is fully recognized by scholars (e.g., Fuligni et al, 2002; Fuligni, Tseng, & Lam, 1999; Yee et al., 2007). For example, Fuligni et al (2002) pointed out that Chinese American adolescents reported more importance in supporting and assisting family household than their counterparts from European background. Family obligations may be perceived differently among different individuals, varying from a more explicit way such as how much time to spend with family to a more hidden way such as feeling obligated to bring up family's status by taking a well paid job.

Yee et al. (2007) argued that family obligation can function as a protection for Asian American children when they select majors/careers since their career path has been

filtered to a relatively “safe” direction where networking and role models have been established for them by elders in their family system. However, family obligation can also function as a barrier to Asian American children in that obligations may hinder children from pursuing their true passion if their choices are quite different from what elders have chosen for them. No previous studies have been identified on family obligation as a support or a barrier to Asian Americans’ career choice. Another purpose of the present study was to examine the association between family obligation and interest-choice congruence. A negative association would suggest that family obligation functions as a barrier to career choice, while positive association would suggest that family obligation functions as a support to career choice. I hypothesized that family obligation is a barrier to career choice. More specifically, I hypothesized that interest would have stronger association with career choice when perceived family obligations were low and interest would have weaker association with career choice when perceived family obligations were high. Examining the relationship among family obligation, vocational interest, and career choice could be a possible way to explain the lack of relation between Asian Americans’ vocational interest and career choice.

Perceived Opportunities

Fouad et al. (2008) identified seven domains that influence Asian Americans’ career decision making. Besides family factors they hypothesized that cultural influence is another aspect found to be important in career-decision making. In this cultural influence domain, perceived opportunity is one of sub-categories.

Nguyen and Huang (2007) pointed out that “U.S. history is replete with incidents of social disadvantage for Asian Americans, due to racism, prejudice, discrimination, and oppression” (p.91). They indicated that the social hierarchy and structure has caused residential, economic, social, and psychological segregation. Economic segregation involves persistent employment discrimination in hiring and pay. Residential segregation reflects a strategy of grouping a set of resources together to cope with externally imposed restrictions and limitations on choice. This in turn results in having many Asian American children grow up in an inhibiting environment, in which they only perceive limited occupation opportunities.

Similarly, Leong and Hardin (2002) pointed out that Asian Americans are likely to encounter barriers to success due to racism and discrimination based on perceived or real experiences. They cited Woo’s (2000) article explaining that the experienced barriers for Asian Americans to advance in organization are similar to the “glass-ceiling effect” documented for women. Leong and Hardin (2002) also stated that assuming equal opportunity and choices for all individuals regardless their ethnic background is not realistic. They argued that minority status may influence career interest by affecting activities and occupations to which individuals are exposed. Moreover, Sue and Okazaki (1990) noted that Asian Americans experience and perceive limited mobility in areas such as sport, politics, and entertaining, in which achievements do not heavily rely on education level. Therefore, Asian Americans intent to choose career areas that heavily rely on education level because those areas are perceived among Asian Americans to have more opportunities for success.

These studies documented that Asian Americans perceive limited opportunities that may then impact their vocational interest and later career choices. Leong and Hardin (2002) summarized that exploring how perceptions of limited opportunities due to one's minority status would be important to consider when explaining the overt categories of minority membership. In responding to Leong and Hardin's (2002) call on designing studies with cultural specific variables, I chose to include perceived opportunities as a variable and to examine the association between perceived opportunities and interest-choice congruence. I hypothesized that the greater perception of limited opportunity, the lower the interest-choice congruence.

Intergenerational Conflicts

Scholar (Drachman, Kwon-Ahn, & Paulino, 1996; Ying & Chao, 1996) have observed that Asian American families suffer from intergeneration conflict or tension between immigrant parents and their children. Compared to European American counterparts, levels of intergenerational conflict were significantly higher among Asian American college students (Tsai-Chae & Nagata, 2008). Intergeneration conflicts have been explained as an acculturation gap, which due to the different rate of acculturation, in addition to the typical generation gap between immigrant parents (or parents strongly adhere to traditional culture) and their U.S.-raised children (Lee, Choe, Kim, & Ngo, 2000). Intergeneration conflict also reflects generational differences in cultural orientation (Tsai, Chentsovaa-Dutton, & Wong, 2002). Lee et al. (2000) noted that intergenerational conflicts can occur in many domains of parents-children interactions,

such as martial, occupational, economic, and social domains. Few studies have investigated the area of intergenerational conflicts and career choice. Despite limited studies, scholars (e.g., Chung, 2001) reported that immigrant parents want their children to pursue occupations that would help bringing up the whole family's social economic status. However, their children may not necessarily want to pursue such occupations. The intergenerational conflict may thus occur over competing desires. However, given the strong Asian value of respecting authority and submitting to the wisdom of the elders, Asian American students are more likely than their European American counterparts to follow parental guidance (Leong & Gupta, 2007).

The importance of obeying parents' guidance is further described in filial piety, a critical and fundamental value emphasized in Asian culture. Filial piety refers to

> obeying and honoring one's parents, providing for the material and mental well-being of one's aged parents, performing the ceremonial duties of ancestral worship, taking care to avoid harm to one's body, ensuring the continuity of the family line, and in general conducting oneself so as to bring honor and not disgrace to the family name. (Ho, 1994; cited in Okagaki & Bojczyk, 2002)

Obeying elders is believed to be an expected way to fulfill family obligations and filial piety. If an elder family-member wants younger members to pursue certain career path, younger members are expected to do so; otherwise, they can be accused for not having filial piety, an important misbehavior in traditional Asian culture. Therefore, compared to other formats of parent-child relationship, intergenerational conflicts are more likely to cause the direct sacrifice of personal interest to follow parental guidance, which may in turn lead to low interest-choice congruence. I hypothesized that intergeneration conflicts would impact the association between Asian Americans' interest and career choice. More

specifically, I hypothesized that interest would have stronger association with career choice goals when intergeneration conflicts were low and interest would have weaker association with career choice when intergeneration conflicts were high.

Acculturation and Occupational Congruence

Many researchers (e.g., Byars & McCubbin, 2001; Fouad, & Bingham, 1995; Kim, 2007; Leong & Hardin, 2002; Ponterott, Baluch, & Carielli, 1998; Tsai, Chentsova-Dutton, & Wong, 2002) have suggested that acculturation is an important variable to consider in studies of Asian Americans' career development. Moreover, Yee, DeBaryshe, Yuen, Kim, & McCubbin (2007) indicated that acculturation level needs to be considered together with family influence when explaining how Asian American youth choose careers. In Yee's et al. (2007) review they concluded that Asian Americans are greatly impacted by their families on choosing certain occupational pathways, "which is specifically true among less acculturated families" (p.79). They cited Castelino's 2005 study pointing out that immigrant families have a perception of which occupations can effectively help family's economic status thus strongly encouraged their younger family members to pursue such occupations. Chung (2001) provided some evidence of the association between acculturation and intergenerational conflicts. Based on the data from 342 Asian American college students, Chung found that Asian Americans who were more acculturated reported experiencing less conflict with their parents in the areas of education and career than low acculturated counterparts. In addition, Leong and Hardin (2002) stated that less acculturated Asian Americans were more influenced by family

input while more acculturated Asian Americans were greatly impacted by personal interests and individual strengths. They highlighted the importance of adding an understanding of the effects of acculturation on career variables in Asian American's career studies. The present study included acculturation to understand the occupational segregation and occupational congruence.

Acculturation, as a psychological structure, has historically been considered as a unidimensional process in which gaining values and characteristic of host culture will be in the cost of losing those of heritage culture (Berry & Annis, 1974; Szapocznik, Scopetta, Kurtines, & Aranalde, 1978). More recent research recognize the complexity of the acculturation and propose a bicultural concept of acculturation process in which adapting to the host culture does not necessarily sacrifice the identification with heritage culture. On the contrary, the preexistence of a minority community would help individuals to maintain the culture of origin while accommodating to the host culture, therefore, two identities can be co-existing (Kim, 2007). The bidimensional model proposed by Berry (1980) stated that an individual can identify with both host and heritage culture, and the development of acculturation to each culture is independent.

Tsai et al. (2000) argued that there is no one model fits all patterns of acculturation of Asian Americans. They examined acculturation patterns of Chinese Americans who were born in U.S. versus those who were born outside U.S. and came to U.S. before age 12 versus those who came to U.S. after age 12. They concluded that the unidimensional model represented the experience of the recent immigrants better and the bidimensional model represented the experience of later generation better. Given that the

present research was focused on 1.5 and beyond generations, the bidimensional model was used to measure participants' acculturation level. The present research was aimed to evaluating how different dimensions and levels of acculturation would impact Asian American students' interest-choice congruence. I hypothesized that Asian American students with highly acculturated to Asian culture would show lower interest-choice congruence given that they might sacrifice their interests to obey their parents' guidance on selecting major/occupations than those individuals who have lower acculturation level. In addition, I hypothesized that Asian American students with higher level of acculturation to American culture would show higher major/occupation-interest congruence given that they have a higher chance to follow their own interest on selecting major/occupations than those individuals who have lower acculturation level.

Summary

In summary, Asian Americans demonstrate occupational segregation that may be impacted by family and cultural factors. The present study primarily examined family influence on Asian American's career choice, so that the results would enrich the understanding of occupational segregation among Asian Americans. The research questions were: (a) Do Asian Americans present a pattern of interest-choice incongruency (as a result of occupational segregation), (b) Is interest-choice incongruency higher in majors that Asian Americans are traditionally overly represented and lower in majors that are atypically represented by Asian Americans, (c) Do family factors (intergeneration conflicts and family obligations) directly impact interest-choice

incongruence, and (d) Do perceived opportunity and acculturation directly impact interest-choice incongruence?

I examined six hypotheses:

Hypothesis 1. Asian American students' occupational congruence varies across majors (Hypothesis 1a). Students in more traditionally represented areas (e.g., Engineering) have lower occupational congruence, while students in more atypically represented areas (e.g., arts, psychology) have higher occupational congruence (Hypothesis 1b).

Hypothesis 2. Interest-choice congruence is also impacted by generation status. The higher the generation status (meaning that the family stays in the U.S. for more years/generations), the higher the interest-choice congruence.

Hypothesis 3. Acculturation impacts interest-choice congruence. Students that have a higher acculturation level to Asian culture would have lower interest-choice congruence than those who have a lower acculturation level to Asian culture. Students that have a higher acculturation level to American culture would have higher interest-choice congruence than those who have a lower acculturation level to American culture.

Hypothesis 4. Intergenerational conflict impacts interest-choice congruence. I hypothesized that the greater the intergenerational conflicts, the lower the interest-choice congruence; the less the intergenerational conflicts, the higher the interest-choice congruence.

Hypothesis 5. Family obligation impacts interest-choice congruence. I hypothesized that the greater the perceived family obligations, the lower the interest-

choice congruence; and the less the perceived family obligations, the higher the interest-choice congruence.

Hypothesis 6. Perceived opportunity impacts interest-choice congruence. I hypothesized that the greater the perceived limited opportunity, the lower the interest-choice congruence; and the less the perceived limited opportunity, the higher the interest-choice congruence.

The results of present research can help career counselors better understand Asian Americans' career behaviors and struggles to make career choices. It will provide another avenue (e.g., family influence) for career counselors to consider besides identifying Asian American clients' vocational interest. Moreover, the results of present research would further inform direct career intervention programs specific to Asian Americans.

Chapter II

Method

Pilot Study

A focus group interview was conducted to collect first-hand information on interaction between parents and their Asian American children regarding career related issues. Group members were 7 undergraduate Asian American students who registered for a psychology research lab at a mid west university. I first asked each group member to fill out a questionnaire which consisted of 10 open-ended questions (see Appendix C). Then, the group members discussed their answers to the questions. Six out of seven students reported that their parents impacted their career decision. When being asked how their parents are involved in their decisions, some students talked about they were still financially depended upon parents' support, so parents decided which school they attended. Some others talked about they would consider any advice their parents gave. One student wrote "I want a successful career so I would be able to support them (my parents) in the future". Two students mentioned that their parents want them to be financially stable and live in good life. Still another reported that her parents want her to be a layer or a dentist or an architect. When being asked "what factors you may consider when you choose your major", students listed several things they considered such as interest, job market, wage of the career, whether the occupation would bring up the way of family, and what their parents suggest. Among all above factors, it seemed that being able to financially provide family and consider parents or family's need were of themes.

Some students said that they wanted to pay back to their parents. In addition, they mentioned their perceptions of parents' expectations are important as well. These above themes confirmed the decision of including family obligation as a variable in the present study.

Moreover, this writer asked students in the pilot study whether their parents' expectations conflict with what they want to do. One third of students said "yes". When being asked whether students have other types of conflicts with their parents and whether such conflict impact their career choice, five out of seven students answered the question and four out of five said they have other conflicts with their parents (e.g., dating, who they spend time with to study or hang out) but they were not sure whether such conflict would impact their career choice. This exploratory result supported that intergeneration conflicts commonly occur in Asian American families, but whether or not general intergeneration conflict would impact students' career choice still needs further examination. This semi-structured interview helped to gain many inputs from Asian American students. Feedbacks and inputs were used to develop item pools for the family impact scale.

Participants and Recruitment

Participants were 249 Asian Americans drawn from a large west coast university (a major university in the University of California system) and those who viewed a website (Angryasianman.com) that has Asian Americans as its target viewers. Participants from the large west coast university were draw from students who enrolled in

an undergraduate subject pool of Psychology Department. Students in the subject pool chose the present study among other research projects and indicated their interest of participation by registering in prescreening. The prescreening questions asked students to provide their age, ethnic identity, years in the U.S., and other personal information. Students who were age 18 and identified as Asian American and immigrated to the U.S. for more than 8 years were contacted with detailed information about the present study and a link to the online questionnaire. Participants were granted 1 research credit upon their completion of the questionnaire.

Participants recruited from viewers of Angryasianman.com website received no compensation but they were encouraged to fill out the questionnaire to support research on Asian Americans. The Angryasianamn.com is a website that usually attracts viewers who are interested in political or/and cultural issues of Asian Americans in the U.S. The website usually posts news either featuring Asian American individuals or social topics that relate to Asian American community. Although the name of the website may lead to biased impression, the website is not for men only and not for angry person only. Participants in the current study that recruited from this website showed that these viewers of the website were individuals who are young adults, graduate students or individuals with a job. One out of third of the participants were female. Detailed statistical representation of this data set is presented in the following session. The link to the online questionnaire was provided in the invitation letter that was posted on the Angryasianman.com website. The screening of valid participants was done after the data was collected from this source.

The recruitment also included an effort of (a) emailing presidents/heads of Asian American students' organizations and asking for their permission to announce this research opportunity on their list serve, and b) calling/emailing professors or counselors on campuses and requesting them to forward the description of the research opportunity and the link of online questionnaire to Asian American students.

Each participant completed an online questionnaire measuring his/her attitude towards different activities and experiences of interacting with parents. The questionnaire had 145 questions in total consisting of four measures: an interest measurement (Interest Profiler Short Form; Rounds, Smith, Hubert, Lewis, & Rivkin, 1999), a set of family impact scales (including intergeneration conflict items, family obligation items, perceived opportunities items) that were developed specifically for this research, and an acculturation scale (Vancouver Index of Acculturation [VIA]; Ryder, Alden, & Paulhus, 2000), and a demography questionnaire. It took 40 minutes in average to complete this questionnaire.

Current Data Set Characteristics

General information. The data was primarily collected from two sources: audience of Angryasianman.com (a website with Asian Americans as its targeted viewers), and students in a Department of Psychology experiment pool at a large west coast university. During the data collection, 606 individuals reviewed the online questionnaire through the Angryasianman.com, 201 (33.17%) participants submitted their answers, and 141 (23.27%) responses were valid. The data collected through the

university setting had a higher return rate. There were 165 individuals that reviewed the questionnaire, 117 (70.91%) students submitted their answers, and 108 (65.45%) responses were valid. The invalid data included those who finished only few questions in the questionnaire, or finished less then two subscales, or were repeated answers from the same individual. Those responses indicating that the participants were under 18 or were not identified as Asian American were also excluded from the data set.

Age, gender, and academic class. The 249 valid participants are from 18 to 45 years old. The average age in this sample was 22.16 (SD = 4.88). There were 88 (35.34%) participants aged from 18 to 19, 140 (56.22%) participants aged between 20 to 29, and 21 (8.43%) participants aged between 30 to 45. Two samples from different sources indicated a different pattern. Within the university sample (108 valid data), participants are from 18 to 25 years old. There were 45 (41.7%) participants aged 18, 21 (19.4%) aged 19, 26 (24.1%) aged 20, and 16 (14.8) aged between 21 and 25. The website sample showed a wider range of age with majority participants aged between 22 to 26. More specifically, within the website sample (141 valid data), participants are from 18 to 45 years old. There were 7 (5%) participants aged 18, 15 (10.6%) aged 19, 15 (10.6%) aged 20, 15 (10.6%) aged 21, 54 (38.3%) aged between 22 to 26, 28 (19.8%) aged between 27-34, and 7 (5%) aged between 35 to 45.

The 76 (30.5%) participants in total sample identified as male, 172 (69.1%) participants identified as female, and 1 (.4%) identified as transgender. Two samples from different sources indicated a similar pattern. Within the university sample, 34 (31.5%) identified as male, 73 (67.6%) participants identified as female, and 1 (.9%)

identified as transgender. Within the website sample, 44 (29.8%) identified as male, and 99 (70.2%) participants identified as female.

Sorting participants into their academic year, within total sample, 46 (18.5%) participants were freshman, 34 (13.7%) participants were sophomore, 43 (17.3%) participants were junior, 42 (16.9%) participants were senior, 38 (15.3%) participants were graduate student, and 44 (17.7%) participants reported that they had graduated and obtained a job now. Two separate samples showed a different pattern. Within the university sample, 42 (38.9%) participants were freshman, 23 (21.3%) participants were sophomore, 29 (26.9%) participants were junior, and 14 (13.0%) participants were senior. Within website sample, only 4 (2.8%) participants were freshman, 11 (7.8%) participants were sophomore, 15 (10.6%) participants were junior, 28 (19.9%) participants were senior, 38 (27.0%) participants were graduate student, and 44 (31.2%) participants reported that they had graduated and obtained a job now.

Cultural heritage and generation status. The present study asked participants to specify their cultural heritage (e.g., Chinese, Korean) within their Asian American identities. The reported cultural heritages included 14 sub-cultural groups. Some participants identified with bi-cultural heritages. Table 1 presented a summary of all reported cultural heritages. The top 6 sub-cultural groups were Chinese (*n* = 114, 45.8%), Korean (*n* = 28, 11.2%), Filipino (*n* = 21, 8.4%), Vietnamese (*n* = 20, 8.0%), Taiwanese (*n* = 15, 6.0%), and Japanese (*n* = 9, 3.6%). Two separate samples indicated similar patter with slightly differences. Within university sample, the top 6 sub-cultural groups were Chinese (*n* = 57, 52.8%), Korean (*n* = 15, 13.9%), Vietnamese (*n* = 9, 8.3%), Filipino (*n*

= 7, 6.5%), Indian (*n* = 6, 5.6%), and Taiwanese (*n* = 5, 4.6%). Within website sample, the top 6 sub-cultural groups were Chinese (*n* = 57, 40.4%), Korean (*n* = 13, 9.2%), Filipino (*n* = 14, 9.9%), Vietnamese (*n* = 11, 7.8%), Taiwanese (*n* = 10, 7.1%), and Japanese (*n* = 9, 6.4%).

The present study also asked participants to identify their generation status. The generation status was defined as follows: first generation meant that a participant was born outside the U.S. and immigrated into the U.S. after age 16, the 1.5 generation meant that a participant was born outside the U.S. and came to the U.S. after age 5, second generation meant that a participant was born in the U.S. but one or both parents were first or 1.5 generation, and third generation or beyond meant that the participant and parents were born in the U.S. Most of participants in the present study within total sample were second generation (*n* = 168, 67.5%), followed by 1.5 generation (*n* = 59, 23.7%), third generation or beyond (*n* = 16, 6.4%), and first generation (*n* = 6, 2.4%). The two separate samples showed a similar pattern. The second generation counted for two third of participants (university sample: *n* = 73, 67.6%; website sample: *n* = 95, 67.4%). It followed by 1.5 generation (university sample: *n* = 28, 25.9%; website sample: *n* = 31, 22.0%), third generation or beyond (university sample: *n* = 4, 3.7%; website sample: *n* = 12, 8.5%), and first generation (university sample: *n* = 3, 2.8%; website sample: *n* = 3, 2.1%).

Measures

Interest Profiler Short Form. Participants' interest was measured by Interest Profiler Short Form (IPSF). The IPSF, a short form, was developed from the long form of the O*NET Interest Profiler (IP; Rounds, Walker, Day, & Hubert, 1999). The long form of the Interest Profiler includes 180 items in total with 30 items each for six interest categories (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) defined by Holland (1997). The Cronbach alpha coefficients for IP, based on a sample of 1,061 individuals, ranged from .93 to .96 for the six RIASEC scales. The test-retest reliability, based on a sample of 132 individuals, ranged from .81 to .92 for the RIASEC scales. The concurrent validity of IP was examined by correlating the IP RIASEC scales with the Interest-Finder (Wall & Baker, 1997; Wall, Wise, & Baker, 1996) corresponding RIASEC scales. The correlations ranged from .73 to .84 for the six RIASEC scales. The Interest Profiler Short Form (IPSF) was developed based on an effort to reduce the administration time and ease the scoring process while maintaining reliability and validity of IP.

The IPSF contains 60 items in total with 10 items per RIASEC type. Each item is a work activity (See Appendix D for the IPSF). Several sample items were "Build kitchen cabinets", "Teach an individual an exercise routine", and "Buy and sell stocks and bonds." These items were designed to explore individual's vocational interests by rating the extent to which an individual would like to do certain activities. Participants were asked to rate each item based on a five-point scale with 1 indicating strongly dislike, 3 indicating Neutral, and 5 indicating strongly like. The IPSF was scored on the six

RIASEC scales and the three highest scores were converted into a three-letter Holland code.

Choice goals. Choice goals were measure by two open-ended questions in the demographic questionnaire. Participants were asked about their academic majors. If undecided, they were instructed to list possible major(s) they would pursue. Also, participants were asked about their career intention(s) and were instructed to give specific occupation title(s) as their answers. If a participant gave more than one answer for their majors or occupations, the first listed major/occupation was used as her/his answer. Each major and occupation title was then coded into a three-letter Holland code, respectively. For example, psychology major was coded as "ISE". The occupation title "counseling psychologist" was coded as "SIA". The procedure for coding majors and occupations is discussed below. The codes for majors and occupations were used later to compare with each participant's RIASEC code that obtained from IPSF (the interest measurement) for major-interest congruence and occupation-interest congruence.

Procedure for coding occupations. One of main efforts in data analyses was to code all participants' self preferred occupations and parents' expected occupations into Holland three-letter codes. Rounds, McKenna, Hubert, and Day (2000) reminded researchers that classifying occupational titles based on few raters' rating may introduce potential errors, which will in turn impact the following congruence computation. To avoid errors caused by directly coding the occupational titles by one or few raters based on their training of understanding Holland theory and coding system, the present study chose to use existing code systems to classify occupations.

Occupations in the present study were coded based on the O*NET (Occupational Information Network) online database. The O*NET system is a data base that was developed by the US Department of Labor and Employment and Training Administration. It currently includes 965 occupations. The O*NET data base provides for each occupation its job descriptions, required skills/knowledge/abilities, Holland code, average wage, projective needs in the job market within a few years, and etc. The Holland code for each occupation provided in the O*NET was used in the present study. To get the matched Holland code from the O*NET for each reported occupation title in the current data, the coding procedure was conducted with following steps: this writer typed in one reported occupation title in the O*NET database (http://online.onetcenter.org/), searched for the Holland code for the occupation. However, some occupations could not be found in O*NET with the exact type-in occupation title or there was only two-letter code instead of three-letter code reported in O*NET for a specific occupation. In above occasions, two rules were followed.

Rule 1. Use the alternative occupation with the highest relevant score to represent the type-in occupation.

Some occupations reported by participants could not be found with the exact occupation title in the O*NET data base. In such cases, the O*NET data base provided several alternative occupation titles with a "relevant score" attached with each alternative occupational title. The relevant score, a score ranging from 0 to 100, indicated to what extend the alternative occupation title is relevant to or similar with the typed-in occupation title. An alternative occupation title with its relevant score as 100 meant that

the alternative occupation title was exactly the same as the typed-in occupation. An alternative occupational title with its relevant score as 0 meant that the alternative occupation title was not similar at all with the typed-in occupation. The alternative occupation title with the highest relevant score was selected as the replacement of the type-in occupation title, and its Holland code was obtained to be used as the final code for the typed-in occupation. For example, a reported occupation title from a participant is "journalist". When typing in "journalist" (the typed-in occupation) in the O*NET data base, no exact occupation with the same occupation title came out, however; several alternative occupation titles were listed, such as "reporters and correspondents," "broadcast news analysts," "radio and television announcers," and etc. Each alternative occupation was presented with a relevance score indicating how much each of alternative occupations was similar with the typed-in occupation ("Journalist"). The "reporters and correspondents" had a relevant score of 100, while "broadcast news analysts" had a relevance score of 90, and "radio and television announcers" had a relevant score of 87. Therefore, the "reporters and correspondents" occupation that had the highest relevant score was chosen and its Holland's code was obtained to be used as the code for "journalist", which was "AEI".

Rule 2. Check Occupational Interest Profiler (OIP) scores when O*NET provides only two-letter code instead of three-letter code for an occupation.

It was notable that some occupations were presented with two-letter Holland code in O*NET, which could not fully achieve the goal of coding all reported occupations in the present study with three-letter codes. In these cases, the Occupational Interest Profiles

(OIP) was used to obtain the third letter of the code. OIP was an analyst ratings system consisting six numerical scores for each occupation based on how descriptive and characteristic the occupation was for each RIASEC environment defined by Holland. The OIP was first developed in 1998 by Rounds, Smith, Huber, Lewis, and Rivkin (1999). The latest revision was published in 2008 (Rounds, Armstrong, Liao, Lewis, & Rivkin, 2008). The OIP was an extended source to Holland code in the O*NET database in terms of that it provided a complete profile based on six RIASEC ratings for an occupation. As mentioned earlier, when the O*NET only provided a two-letter code for an occupation, this writer checked the same type-in occupation in OIP data set and identified the third highest score among six RIASEC ratings and then used it as the third letter code for the occupation.

With above procedures and rules, participants' reported "self preferred occupation" and "parents expected occupation" were coded. Among the effort of coding all self preferred occupations, 234 out of 249 self preferred occupations were coded with three-letter Holland code and 15 out of 249 responses were not coded into Holland code because participants reported that they do not know what they will pursue as occupations. Among parents expected occupations reported by 249 participants, 153 out of 249 responses were coded with three-letter codes, and 96 out of 249 (38.55%) responses were not coded into Holland code because participants did not give any occupation titles as their answers. Instead, they provided some abstract ideas about what their parents expected them to do. For example, some participants said "(my parents) expect me to take a job that commands a high income along with social respects"; "any job they see as

lucrative and stable", "something with high status". Some others just said "(my parents expect me to take) whatever I want". Still others reported that "I don't know" or "not sure".

Procedure for coding majors. Self reported majors indicated by 249 participants were coded into three-letter Holland code as well. Majors in the present study were coded based on the Educational Opportunities Finder (EOF), which was developed by Rosen, Holmberg, and Holland in 1992. The EOF is the second edition of the College Majors Finder, which was developed to provide Holland codes for majors in order to help students to search majors based on matched vocational interest. The EOF was used with the Self-Directed Search and the Vocational Preference Inventory, measurements for vocational interest based on Holland RIASEC hexagonal model. The EOF presented 750 programs of study (major) with a three-letter code for each program of study (major). A straightforward procedure was used to obtain RIASEC codes for majors reported in the present study. This writer first identified a participant's reported major, and then searched the alphabetical listing of programs of study in the EOF. Once the major was located in the list in the EOF, the three-letter code was obtained for the major. In cases that the reported major could not be located in the EOF, which was rarely happened, the reported major was searched online to identify its study contents. A most similar alternative major was then assigned based on its study contents to replace the original reported major. This alternative major was then searched in the EOF and the code for the major was obtained. All 249 reported majors were coded with three-letter codes expect one participant because the participant reported that s/he did not know her/his major yet.

Procedure for coding interests. In terms of coding for interests measured by Interest Profiler Short Form into three-letter Holland code, the code was obtained based on the result of comparing six RIASEC scale scores. The type (Realistic, Investigative, Artistic, Social, Enterprising, Conventional) that has the highest score was coded as the first letter, the type with second highest score was coded as the second letter, and the type with the third highest score was coded into the third letter. For example, the scores for RIASEC subscales for a participant were 16 (Realistic), 21 (Investigative), 47 (Artistic), 33 (Social), 18 (Enterprising), and 13 (conventional). Therefore, the Holland code for this participant's vocational interest is ASI. When having tie scores across RIASEC scales, the following rules were used to assign the code.

> ***Rule 1***. If two or more RIASEC scales have tie scores when assigning the second or the third letter code, the assigned letter was selected to reflect the nearest hexagonal distance (in the RIASEC hexagonal model) to the previous identified letter code.

For example, a participant's six (6) RIASEC scale sores are 32 (Realistic), 41 (Investigative), 32 (Artistic), 28 (Social), 25 (Enterprising), and 34 (Conventional). The first letter of Holland code is I, the second letter is C, and the third letter is R. Letter R is assigned because comparing R and A (which have tie scores on these two subscales) R is nearer than A to the second letter C (the previous identified letter code) in the hexagonal model (see Figure 1 for the Holland hexagonal model). The same rule was applied when tie scores occurred in assigning the second letter. When assigning the second letter, if two tie scores occurred and one was assigned as the second letter, the other one was assigned

as the third letter. If three or more tie scores occurred in assigning the second letter, one was assigned as the second letter based on the Rule 1, the third letter was selected between the remaining two or more tie scores to reflect the nearest hexagonal distance (in the RIASEC hexagonal model) to the second letter code. In the occasion that tie scores occurred when assigning the first letter, the Rule 2 was applied.

> ***Rule 2.*** If two or more RIASEC scales have tie scores when assigning the first letter code, the letter was selected to match with the self-reported result of directly ranking six RIASEC type.

In addition to IPSF measurement, all participants were asked to directly rank six RIASEC type based on how much they like each set of descriptions of six RIASEC categories. The participant's responses on ranking these six (6) RIASEC type was checked as the reference source, if tie scores occurred when assigning the first letter. Among all tie scores, the type which has a closer distance in a hexagonal model with the top ranked RIASEC type was selected as the first letter. For example, a participant's six (6) RIASEC scale sores are 36 (Realistic), 36 (Investigative), 29 (Artistic), 15 (Social), 21 (Enterprising), and 22 (Conventional). The highest scores are obtained on both R and I type. This author then referred to the answers this participant gave to the question in the questionnaire asking the participant to rank six type of activities based on their interest. This participant ranked Realistic activities as the top interested activities. Therefore, the Holland code for this person's interest is RIA.

Congruence computation. Ever since Spokane (1985) reviewed eight methods of calculating congruence, more congruence indices have been proposed (e.g., Brown &

Gore, 1994; Lent & Lopez, 1996; Young, Tokar, & Subich, 1998). Some of them use the discrepancy between the corresponding one (or two, or three) letter code(s) of interests and chosen occupations, while other indices are more complex assigning congruence index based on the interrelationship among the RIASEC scores. No one index has proved to be more valid than other indices. Tinsley (2000) advised that any study using congruence indices needs to include 2 or 3 congruence indices. In responding to this advice, the current study chose three methods of calculating congruence: C index, FLHD index, and M index.

C index. "C Index" proposed by Brown and Gore (1994) is believed to be the most sensitive to different out-of-order code comparisons, and is reported to be the only symmetrically distributed index among all proposed indices (Brown & Gore, 1994; Spokane, Meir, & Catalano, 2000). Tinsley (2000) also indicated that C index is one of few indices that best captures the Holland RIASEC typology. To understand the rationale of assigning values to letter comparisons in C index, it is crucial to understand J. Holland's (1973, 1997) trait theory and his hexagon. In Holland theory, individuals are categorized as one of six types: Realistic(R), Investigative (I), Artistic (A), Social (S), Enterprising (E), or Conventional (C). Holland and colleagues proposed a hexagon to represent the inter-relations between the six interest categories, producing a circular arrangement (see Figure 1). This configuration is often referred to as RIASEC model. In this model, adjacent types (e.g., R and I) are more similar than alternate types (e.g., R and A), and alternate types are more similar than opposite types (e.g., R and S).

According to Brown and Gore (1994), the “C Index” extends the Holland’s (1973) first letter hexagonal distance measure (FLHD index) to a more than one-letter case. The C index is obtained through assigning corresponding values (3, 2, 1, 0) to the result of comparing first, second, and third codes of person and environment, respectively, and then multiply with corresponding weights (3, 2, 1) for the first, second, and third code comparison. The formula of C index is as following:

$$C = 3 (X_i) + 2 (X_i) + (X_i)$$

where X_i are values (3, 2, 1, 0) assigned to each comparison based on hexagonal distance between the letters (3 = two letters are identical, 2 = two letters are adjacent in hexagon, 1 = two letters are alternate in hexagon, 0 = two letters are opposite in hexagon). For example, an individual has RIA as his interest code. If he has RIA as his environment code as well, then his C index gets a perfect score which is 18 = 3(3) + 2(3) + (3). If he has CER as his environment code, then the values assigned to the first code comparison is 2 given the two letters are adjacent in hexagon, the value for the second code comparison is 0 given the two letters are opposite to each other, and the value for the third code comparison is 1 given the two letters are alternate in hexagon. His C index score is 7 = 3(2) + 2(0) + (1). The range of C index is 0 to 18.

FLHD index. Holland’s First Letter Hexagonal Distance index (FLHD index) (Holland, 1973) was selected in the present study because of a practical consideration. As stated earlier, the present study coded participants’ reported occupations based on the O*NET classification system, which is one of several classification systems. Eggerth, Doules, Tunick, and Andrew (2005) reviewed three main Holland code classifications

(O*NET, Dictionary of Holland Occupational Types, Strong Interest Inventory). They concluded that their study result yielded an acceptable rate of agreement between the three classification systems. They reported a first letter agreement rate of 70.6% when pairing two out of three classification systems to compare and a rate of 60.21% when comparing across all three systems. For two letters agreement (first and second Holland code letter), they reported a rate of 32.33% with pairwise approach and a rate of 15.71% with a three-way approach. In terms of three letters agreement (first, second, and third Holland code letters), they reported a pairwise agreement rate of 12.56% and a three-way agreement rate of 2.62%. Given its significant drops of agreement rate from one letter agreement to two letter agreement (70.6% to 32.33% pairwise, 60.21% to 15.71% three-way), this writer believes that choosing one letter instead of two or three letters to compute congruence index would greatly avoid errors introduced by selecting one particular classification system (O*NET in current case) to compute congruence index. In other words, the acceptable agreement rate on first letter across three classifications suggested that using FLHD index would reasonably capture the desired quality of computing congruence, no matter which classification was chosen, and avoid errors that may be attached with the approaches of using three letters to compute congruence.

FLHD index uses the concept of hexagonal distance between RIASEC typology to indicate 4 different levels of congruence. Correspondingly, the FLHD index has a range of 1 to 4. The score (1, 2, 3, 4) was assigned to comparison between person and environment types based on the hexagonal distance between the two types. When two types are identical (the hexagonal distance is zero), the congruence level is the highest

and a score of “4” was assigned. For example, a score of 4 was assigned when comparing Realistic type and Realistic type, Investigative type and Investigative type, Artistic type and Artistic type, and so forth. When two types are adjacent to each other in hexagonal distance, their congruence hits the second highest level and a score of “3” was assigned. For example, comparing Realistic type and Investigative type or comparing Investigative type and Artistic type would yield a congruence index score of 3. Similarly, when two types are alternate from each other in hexagon, their congruence hit the third level with a congruence index score of 2. Several examples include comparing Realistic type with Artistic type, or Investigative type with Social type, or Realistic type with Enterprising type. Lastly, if two types locate opposite in hexagon, their congruence level is the lowest of 4 levels with a congruence index score of 1. Several examples are Realistic type with Social type, Investigative type with Enterprising type, and Artistic type with Conventional type.

M index. Different from C index and FLHD index which were computed based on the concept of hexagonal distance, the Ichan’s M index was developed based on a mathematic approach which Ichan (1984) claimed to have a broader applications both within and out of vocational setting to calculate agreement. Ichan’s M index was therefore selected to provide another perspective of computing congruence in the present study. According to Ichan (1984), the formula of M index is as following:

$$M = \sum_{i=1}^{k} \sum_{j=1}^{k} \delta_{ij} w_{ij}$$

where $\sigma_{ij} = 1$ if the object ranked *i*th by judge 1 is ranked *j*th by judge 2, $\sigma_{ij} = 0$ otherwise.

When $\sigma_{ij} = 1$, it indicates that an agreement of the (i, j) type occurs, corresponding to a match in position i and j.

Ichan (1984) provided a table for w_{ij} when computing M. Table 2 presents the table that was given by Ichan. The measure M is computed by adding the weights corresponding to positions where matches occur. For example, a participant's Holland code for self preferred occupation is EIA and the code obtained from Interest Profiler is ESI. As shown in Table 2, the weight for the match between position 1 of judge 1(from EIA) and position 1of judge 2 (from ESI) is 22 and the weight for the match between position 2 of judge 1(from EIA) and position 3 of judge 2 (from ESI) is 2. Then, M = 1*22 + 1*2 = 24.

Intergeneration conflicts. The present study was aimed at examining how family conflicts, especially on major/career related topics, impacted Asian American students on choosing their majors/careers. The existing family conflicts scales (e.g., [Asian American Family Conflicts Scale], Lee, Choe, Kim, & Ngo, 2000) is more general rather than focuses specifically on occupational conflicts. The present study developed an item pool to serve the specific design of this study. The intergeneration conflicts item pool consisted of 40 items in total. It was developed to measure intergeneration conflicts from two aspects: one aspect measuring specific conflicts on major/career related values, another aspect covering the intergeneration conflicts in general. As shown in the Appendix D intergeneration conflict scale, the first 20 items measures specific conflicts on major/career related values. These items were developed based on a revision of items related to "family recognition through achievement" from the Asian American Values Scale-Multidimensional (AAVS-M). The first 10 items are the same as the next 10 items.

Each of 10 items reflects a type of value related to career choices with a consideration of family. Several sample items are: “Succeeding occupationally is an important way of making one’s family proud”, “One should bring fame to family through taking high prestige jobs”, and “Making achievements is an important way to show one’s appreciation for one’s family.” Participants were instructed to respond to the first 10 items based on how they think the following values were held by their parents, while participants were instructed to respond to the item 11 to 20 based on how much they agree with these values. The comparison of corresponding items between perceived parents’ value and one’s own value provides an index on how much conflicts participants have with their parents on choosing a career with considerations for family. The sum of absolute values of differences between comparisons of corresponding items was computed for the total score of “intergeneration conflict on major/career related values” subscale. A higher score indicated a higher level of intergeneration conflicts on major/career related values. In addition, the sum of first 10 item scores was computed as a total score for perceived “parents’ belief on major/career related values” subscale. A higher score indicated that one perceived his/her parents hold strong beliefs that one should help family through their major/career. The sum of the item 11-20 scores was computed as a total score for “self belief on major/career related values” subscale. A higher score indicated that one holds strong belief that one should help family through their major/career. The reliability of the “intergeneration conflict on major/career related values” items was examined with internal consistency analysis. The Cronbach’s alphas coefficient for items of parents’ belief on major/career related values was .92, and

Cronbach's alphas coefficient for items of self belief on major/related values was .88, both of which suggested a good stability of the item pool.

The second part of intergeneration conflict item pool contained another 20 items, which covered more general intergeneration conflicts. These items were developed based on a revision of items related to education and career in the Intergenerational Conflict Inventory (Chung, 2001). Several sample items were: My parents and I have different ideas on "How much time to spend on studying", "Importance of academic achievement", and "What to major in college". Again, the first 10 items within this part were the same as the next 10 items. Participants were asked to respond to the first 10 items within this part based on how often these conflicts appeared, then participants were asked to respond to the next 10 items based on how intense when such conflicts happened. This second part of intergeneration conflict item pool is referred to as the subscale of "general intergeneration conflict with frequency measure" and "general intergeneration conflict with severity measure". The total scores were computed for frequency and severity, respectively. A higher score on this subscale with frequency measure indicated more frequent intergeneration conflicts on general developmental tasks. A higher score on this subscale with severity measure indicated more severe intergeneration conflicts on general developmental tasks. The reliability of the general intergeneration conflict items was examined with internal consistency analysis. The Cronbach's alphas coefficient was .79 for items of "general intergeneration conflict with frequency measure", and the Cronbach's alphas coefficient was .85 for items of "general intergeneration conflict with severity measure". Scholars (Lee et al., 2000) suggested that two measures (frequency

measures, severity measures) are not theoretically significant different from each other, thus, one measure can be chosen to represent the general intergeneration conflict. The present study chose severity measure as the representative scale given its higher internal reliability.

The Family Acculturation Conflicts Scale (Lee, Choe, Kim, & Ngo, 2000) was also included in the present study to provide a concurrent validity check for the Intergeneration Conflict Item Pool developed for the present study. The Family Acculturation Conflicts Scale (FCS) consisted of 10 items asking participants to rate the likelihood of conflict and seriousness of problems on 10 family situations. The FCS-Likelihood and FCS-Seriousness scores were computed for each participant. High score on FCS-Likelihood indicated great likelihood of having family acculturation conflicts. High score on FCS-Seriousness indicated high level of seriousness of family acculturation conflicts. Cronbach's alpha coefficients were .81 and .84, respectively, for FAC-Likelihood and FCS-Seriousness, suggesting internal reliability for the scale. The 3-week test-rest reliability, based on a sample of 11 participants (Lee et al., 2000), was high for both FCS-Likelihood (r = .80) and FCS-Seriousness (r =.85). The concurrent validity test, based on a sample of 109 Asian American college students, showed that FCS moderate correlated with family based acculturative stress (r = .53). Again, the present study chose FCS-Seriousness measure as the representative scale for Family Acculturation Conflicts Scale given its higher internal reliability.

Family obligations. Family obligations items were developed specifically for the present study, given that no existing family obligation scales specifically measure career

related family obligations. The item pool, which consisted of 8 items, was written by this writer and was revised based on discussions in the pilot study. Some sample items are “I feel obligated to follow my parent’s ideas about the choice of majors/careers”, “I feel it is my duty to achieve financial success to raise my family’s social status in the society”, and “I feel like I won my parents because they have sacrificed a lot for me”. Participants are asked to rate how much they agree on such descriptions. The reliability of the Family obligation scale was examined with internal consistency analysis. The Cronbach’s alphas coefficient was .84 suggesting a good stability of the scale.

Perceived opportunities. Given that no existing scale that was available for the present study to examine one’s perception of career opportunities for Asian Americans, five items were specifically developed. Sample items are: “I feel that I have fewer career options than students of other races”, “I can only succeed in a small number of majors/careers”, “I have more chances to succeed if I enter the same occupation as my parent’s occupation”, “I feel that my career opportunities are limited by my ethnicity/race/language”, and “I have opportunities to succeed in almost any major/career that I choose”. The reliability of the Family obligation scale was examined with internal consistency analysis. The Cronbach’s alphas coefficient was .81 suggesting a good stability of the scale.

Acculturation. Acculturation was measured by Vancouver Index of Acculturation ([VIA], Ryder, Alden, & Paulhus, 2000). VIA was developed based on bidimensional model believing that heritage and mainstream culture identifications are independent rather than strongly inverse with each other. It is a self-report instrument that

covers several domains relevant to acculturation, including values, social relationships, and adherence to traditions. The VIA contains 20 items, with 10 items measuring heritage dimension and another 10 items measuring mainstream culture dimension. Several sample items are: “I often participate in my *heritage* cultural traditions”, “I often participate in mainstream American cultural traditions”, “I would be willing to date a person from my *heritage* culture”, and “I would be willing to date a mainstream American”. The Cronbach alpha coefficients for heritage subscale among Chinese (n = 204), non-Chinese East Asian (n = 70), and non-English-speaking (excluding Chinese and East Asian) descent (n = 140) sample are .91, .92, and .91, respectively. The Cronbach alpha coefficients for mainstream subscale among these three populations are .89, .85, and .87, respectively. The concurrent validity of VIA when compared with mean scores of the Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA) was -.57 for heritage subscale and .60 for mainstream subscale among Chinese sample; and was -.60 for heritage subscale and .51 for mainstream subscale among East Asian sample.

Demographic Questionnaire. The demographic questionnaire consisted of 14 items. It collected participants’ information, such as age, gender, academic class standing, major, racial identity, generation status, years in the U.S., number of siblings, self-expected occupation, parents-expected occupation, parents’ education background, and parents’ occupation. Participants were required to answer personal information but were asked to voluntarily provide answers to parents’ related information.

Data Analysis

Preliminary analysis. Prior to data analysis, data was screened by examining for missing values. Responses that contained more than 5% missing values were removed from data analysis. All participants, especially those who were recruited from the Angryasianman.com website, were screened for their legibility of participating in the study. Those who did not identify themselves as Asian American, or aged under 18, or had lived in the U.S. for less than 8 years were deleted from the data set. The mean score, standard deviation, the internal reliability estimates, and correlation matrix for all the scale variables were calculated.

Descriptive analysis. The general descriptive statistics were calculated to present the characteristic of the sample. The congruence indices were also calculated. The present study first computed two different types of congruence: congruence between current major and vocational interest (major-interest congruence), congruence between self-expected occupation and vocational interest (occupation-interest congruence). The means of two types of congruence with three congruence indices (FLHD index, C index, M index) were summarized and presented. The correlation between each pair of congruence types and each pair of congruence indices were calculated and presented as well. This information provided an overall picture about Asian American students' congruence.

Mean comparison on congruence. The present study hypothesized that Asian American students' major-interest congruence differs across majors (Hypothesis 1). Moreover, the present study hypothesized that major-interest congruence and occupation-interest congruence differ across generation status (Hypothesis 2), and acculturation

levels (Hypothesis 3). To test these hypotheses, I compared mean scores of congruence indices among different levels of each factor (e.g., RIASEC major, generation status, and acculturation level). Given that the acculturation was measured as a continuous variable, the correlation between acculturation and congruence was computed. I then converted the two dimensions of acculturation from a continuous variable to a category variable. Participants' total score on the acculturation scale was classified into three levels. Those who score within the bottom third of the possible range for the instrument were classified as the low acculturation group. Those in the middle third were classified as the average acculturation group. Those in the top third were classified as the high acculturation group. The analysis of variance (ANOVA) was then conducted to decide whether statistical differences were reached among each pair of comparison. The least squares and maximum likelihood estimators were selected to use when conducting ANOVA given that this approach uses minimum variance unbiased estimators. The *F*-test for equality of factor level means was conducted to determine whether different group means differ from each other in a statistical significant way. Once statistical significance was reached in the *F*-test, the post hoc tests were performed to further estimate and test for factor level effects. The Bonferroni multiple comparison procedure was use to minimize type I error. The comparison and test results for each pair of groups were summarized in tables and figures.

Correlation between occupation-interest congruence and three main variables. As proposed in the present study, contextual factors (e.g., international conflicts, family obligation, and perceived opportunity) would impact Asian American

students' occupation-interest congruence (Hypothesis 4, 5, 6). To test these hypotheses, the present study computed the correlation between occupation-interest congruence and international conflicts, family obligation, and perceived opportunity. Intergeneration conflict was measured by Intergeneration Conflict Item Pool (with two components: conflicts on career/major related values, conflicts on general developmental tasks) and Family Acculturation Conflicts Scale. Three subscales of intergeneration conflict measurement were used, instead of a whole scale, to compute the correlation with occupation-interest congruence.

It was also expected that some personal and contextual factors (e.g., gender, RIASEC occupation, RIASEC major, parents' education level) may impact the association between occupation-interest congruence and intergeneration conflicts, family obligation, and perceived opportunities. To test these hypotheses, an ANOVA was conducted to decide whether statistical differences were reached among each pair of comparison. The least squares and maximum likelihood estimators were selected to use when conducting ANOVA given that this approach uses minimum variance unbiased estimators. The *F*-test for equality of factor level means was conducted to determine whether different group means differ from each other in a statistical significant way. Once statistical significance was reached in the *F*-test, the post hoc tests were performed to further estimate and test for factor level effects. The Bonferroni multiple comparison procedure was use to minimize type I error. The comparison and test results for each pair of groups were summarized in tables and figures.

Chapter III

Results

Descriptive Statistics

The mean score and standard deviation of each scale that measured in the present study were first computed. Table 3 presented these statistics for males, females, and total sample. The Vancouver Index of Acculturation scale (VIA) has a score range of 10 to 90. The mean score of VIA on acculturation with heritage dimension is 67.95 with total sample. The mean score of VIA on acculturation with mainstream culture dimension is 69.28 with total sample. The intergeneration conflict item pool consists of three components with 5 subscales in total. The subscale of "parents' belief on career/major related value" has a score range of 10 to 50. The mean score of this subscale is 40.20 with total sample. The subscale of "students' belief on career/major related value" has a score range of 10 to 50. The mean score of this subscale is 35.34 with total sample. The subscale of "intergenerational conflict on career/major related value" has a score range of 0 to 40. The mean score of this subscale is 8.24 with total sample. The subscale of "general intergeneration conflict with severity measure" has a score range of 10 to 50. The mean score of severity measure is 19.93 with total sample. The subscale of "family acculturation conflict scale with severity measure" has a score range of 10 to 50. The mean score of this subscale is 20.75 with total sample. The Family Obligation item pool has a score range of 8 to 40. The mean score of this scale is 26.94 with total sample. The

perceived opportunity item pool has a score range of 5 to 25. The mean score of this scale is 11.54 with total sample.

The analysis of mean differences (*t*-test) indicated that male participants' perception of parents' belief on career/major related value was statistically significant (t = -2.56, p = .01) when compared to female participants. As shown in Table 3, compared to males, females perceive their parents having stronger belief that younger generations should help family with their careers. Moreover, the perception of family acculturation conflict was statistically significant across gender on the severity measure (t = -2.03, p = .04). Compared to males, females perceive more severe acculturation conflicts.

The correlations between each measure are presented in Table 4. As shown in Table 4, the correlation coefficients ranged from .01 to .74. The measure of parents' belief on career/major related value and the measure of perceived opportunity significantly correlated to most of measures. The highest correlation was between general intergeneration conflict and family acculturation conflict scale (r = .74). It was followed by the correlation between the measure of self belief on career/major related value and the measure of perceived opportunity (r = .62), and the correlation between the measure of parents' belief on career/major related valued and family acculturation conflict scale (r = .53). The rest of correlation coefficients indicated none to moderate correlation among measures.

RIASEC Majors and Occupations

The present study coded participants' reported majors and occupations into RIASEC categories. As shown in Figure 2(a), 53.8% participants were in Investigative major, 20.5% were in Enterprising major, 12% were in Social major, 8% were in artistic major, 4% were in Realistic major, 1.2% were in Conventional major, and .4% were undecided. Self preferred occupations presented a similar trend. The 32.5% students preferred to enter an Investigative occupation, 22.1% preferred Enterprising occupations, 24.1% preferred Social occupations, 8.8% preferred Artistic occupations, 4.4% preferred Conventional occupations, 2% preferred Realistic occupations, and 6% were undecided. As expected, Investigative and Enterprising majors/occupations are chosen most often.

Participants' Profile on Negotiating

It is clear that Asian American students tried to achieve a balance between their parents' input and their own interest when choosing major/career. The negotiation process can be complicated, and it is not of the focus of the present study. However, some thoughts about negotiation process were documented here, hoping to suggest future research directions.

During the coding procedure in which I assigned Holland codes to participants' reported majors, self preferred occupations, and parents expected occupations, several patterns were observed from the data set. First, about 7% students have their preferred occupations completely different from their majors. Second, 9.2% of students specifically reported that their parents want them to have "a job that commands a high income along

with social respects", or "any job they see as lucrative and stable", or "something with high status." In addition, 19.3% students reported that their parents allow them to choose whatever they want or whatever makes them happy. Another 10.4% of students do not perceive their parents to have any specific expectations toward their career. Third, among those students whose major, self expected occupation, and parents expected occupation are not completely the same but have some connections, students seem to demonstrate a negotiation strategy that help them to follow their interest and at the same time incorporate their parents' expectations. Selecting an occupation that meets their parents' expectation on prestige level, although the chosen occupation is not exactly the same as the one their parents proposed, seemed to be one of strategies. For example, some parents want their children to be medical doctor; however, their children choose to be lawyers. Parent would be okay with it since it still provides financial stability and social prestige. Fourth, and finally, based on different intergenerational dynamic and negotiation results, participants' profile in this study roughly presented in six categories and their characteristics are as such:

- Category 1 (follower child): student's major and self preferred occupation is different or quite opposite to each other, but his/her major match with parents expected occupation.
- Category 2 (rebellious child): student's major and self preferred occupation matches with each other, but neither his/her major or self preferred occupation matches with parents' expected occupation.
- Category 3 (compromised child): student's major does not fully match with self preferred occupation, self preferred occupation does not fully match with parents' expected occupation, major does not fully match with parents' expected occupation, but all three choices are connected to each other. Such

student does not fully follow parent, but also not fully follow their interest either.

- Category 4 (no clear idea child): student has a major, but is not sure what s/he wants to pursue as a career, and is not sure whether parents has any expectations.
- Category 5 (supportive parent): student's major matches self preferred occupation, and his/her parents said whatever the child wants to choose is fine with them.
- Category 6 (conditional parent): student's major and self preferred occupation can be the same or different, and parents do not expect specific occupation but indicate that the chosen occupation should have high income, high stability, and high prestige.

All these above patterns presented an exploratory perspective on Asian American students' negotiation results. Future studies are needed to further examine the negotiation process and provide some quantitative evidence.

Congruence Results

The present study used three congruence indices (FLHD index [Holland, 1973], C index [Brown & Gore, 1994], and M index [Iachan, 1984, 1990]) to examine two types of congruence: (a) congruence between one's current major and vocational interest (abbreviated as "major-interest congruence" in text below), and (b) congruence between one's self-expected occupation and vocational interest (abbreviated as "occupation-interest congruence" in text below). As shown in Table 5, all congruence indices indicated a moderate fit for two types of congruence. The FLHD index has a range from 1 to 4. The FLHD index result for 2 types of congruence in current data set ranged from 2.99 to 3.02. The C index has a range from 0 to 18. The C index result for 2 types of

congruence in current data set ranged from 10.29 to 11.10. The M index has a range from 0 to 28, and the M index result for 2 types of congruence in current data set ranged from 15.36 to 16.85.

An independent-samples *t* test was conducted to determine whether there was any gender difference on the mean scores of congruence indices. Given that the data set had only one participant identified as transgender, this one participant was deleted from the data set for this analysis. The mean score of all congruence indices across genders is presented in Table 5. None of the tests were statistically significant suggesting that gender differences are not present for the level of congruence.

The correlation between each pair of congruence indices across two types of congruence were calculated, and the results were presented in Table 6. As shown in Table 6, within each type of congruence the three computed congruence indices (FLHD, C index, M index) showed high correlation with each other with coefficient *r* ranging from .60 to .85, which indicated that three congruence indices produce similar, though not identical, assessment of congruence. The correlation between major-interest congruence and occupation-interest congruence was statistically significant, with coefficient *r* ranging from .17 to .44.

The following text reported all significant results. A significant result supported by all three congruence indices (FLHD, C index, M index) or two of three indices would be considered as a robust result. Caution should be used when a significant result was only supported by one out of three indices.

Major-interest congruence across RIASEC majors. The present study hypothesized that Asian American students' major-interest congruence varies across majors (Hypothesis 1a). Asian American students in more traditionally represented areas (e.g., Bioscience, Business, Engineering) have lower major-interest congruence, and students in more atypically represented areas (e.g., arts, psychology) have higher major-interest congruence (Hypothesis 1b). To test these hypotheses, majors were first coded with three-letter Holland code. Based on the first letter of the code, all majors were categorized into six Holland RIASEC groups, and all participants were sorted into six according groups based on the first letter of their major's code. Then the mean score of major-interest congruence indices for each group was calculated and compared.

An ANOVA was performed to determine whether or not major-interest congruence differed across RIASEC majors. The least squares and maximum likelihood estimators were selected to use when conducting ANOVA given that this approach uses minimum variance unbiased estimators. The *F*-test for equality of factor level means was conducted to determine whether different group means differ from each other in a statistical significant way. The *F*-test results were summarized in Table 7. As shown in the upper rows of Table 7, *F*-test with three indices all indicated significant results (F [5, 213] = 6.01, $p < .001$, FLHD; F [5, 213] = 4.69, $p < .001$, C index; F [5, 213] = 5.57, $p < .001$, M index) suggesting that at least one of the mean scores for each RIASEC group were significantly different from other mean scores. This result showed that major-interest congruence varies across majors and the Hypothesis 1a was supported.

The post hoc tests were used to further estimate and test for factor level effects. The Bonferroni multiple comparison procedure was selected because this statistical test minimize type I error. The comparison and test results for each pair of groups were summarized in Table 8. As shown in Table 8, three congruence indices agreed that major-interest congruence were significantly different: between students with Realistic major and students with Artistic major ($p < .01$), between students with Realistic major and students with Social major ($p < .05$), between students with Investigative major and students with Artistic major ($p < .01$), between students with Investigative major and students with Social major ($p < .01$), between students with Enterprising major and students with Artistic major ($p < .01$), and between students with Enterprising major and student with Social major($p < .05$). In summary, significant differences were found between Realistic, Investigative, and Enterprising major vs. Artistic and Social major.

The mean scores of congruence indices for each RIASEC group were also plotted in Figure 3. As shown in the Figure 3(a), 3(b), and 3(c), three indices for major-interest congruence indicated a consistent trend. Students in Realistic major had the lowest major-interest congruence, and students in Artistic major had the highest major-interest congruence. Students in Social major and in Conventional majors indicated the second highest level of major-interest congruence. Students in Enterprising major and in Investigative major indicated the second lowest level of major-interest congruence. In other words, if ranking all RIASEC majors based on means of major-interest congruence from the lowest to the highest, the order was: Realistic, Enterprising and Investigative, Social and Conventional, and Artistic. It is notable that three types of majors (Realistic,

Enterprising, Investigative) that hit the lowest level of major-interest congruence are majors that Asian American students are traditionally over represented. The types of major that hit the highest level of major-interest congruence is the atypical major for Asian American students. This meant that major-interest congruence was significantly different between traditionally represented majors and atypically represented majors. The Hypothesis 1b was supported.

Congruence across generation status. The present study asked students about their generation status and categorized generation status into four groups: first generation, 1.5 generation, second generation, and third generation or beyond. I hypothesized that generation status may be another factor impacting the congruence between major and interest or/and between occupation and interest (Hypothesis 2).

The mean scores of congruence indices across different generation status were first plotted into Figure 4. As shown in Figure 4(a), 4(b), and 4(c), three indices for major-interest congruence illustrated a similar pattern. The highest major-interest congruence was observed in the third generation and beyond, and the lowest major-interest congruence was observed in the first generation. Major-interest congruence showed an increase when generation status moved from the first generation to the third generation or beyond. It was notable that the 1.5 generation and the second generation shared a similar level of major-interest congruence. Figure 4(d), 4(e), and 4(f) presented a similar pattern of occupation-interest congruence across generation status. The highest occupation-interest congruence was observed in third generation and beyond while the lowest occupation-interest congruence was observed in the first generation. Occupation-

interest congruence indicated an increase when generation status moved from the first generation to the third generation and beyond. The occupation-interest congruence in the second generation dropped slightly or stayed the same compared to the 1.5 generation.

An ANOVA was performed to determine whether or not the observed differences among mean scores of the congruence indices reached a statistical significance. The least squares and maximum likelihood estimators approach was used. The *F*-test for equality of factor level means was conducted. The *F*-test for major-interest congruence yielded no statistically significant results across FLHD index (F [3, 215] = .47, p = .71), C index (F [3, 215] = .21, p = .89), and M index (F [3, 215] = 2.28, p = .08) indicating that no statistically significant differences were found across generation status despite the observed difference in Figure 4. The *F*-test for occupation-interest congruence indicated statistically significant result only for the M index (F [3, 203] = 2.86, p = .04), indicating that at least one of the mean scores of occupation-interest congruence was significantly different than that of other generation status. These results suggest that generation status is related to occupation-interest congruence but not relate to major-interest congruence. The Hypothesis 2b was partially supported.

The post hoc tests were conducted only on occupation-interest congruence to further estimate and test for factor level effects. The Bonferroni multiple comparison procedure was selected to use to minimize type I error. The results of comparing and testing the difference of mean scores across each generation status are summarized in Table 9. As shown in Table 9, M index, but not the other two indices, indicated statistically significant results. The mean score of occupation-interest congruence for first

generation was significantly ($p < .05$) different from that of the 1.5 generation and the second generation, and was significantly ($p < .01$) different from that of the third generation or beyond. There was no significant difference among any pair of 1.5 generation, second generation, and the third generation or beyond. These results are consistent with the observed results from Figure 4(d), 4(e), 4(f) that Asian American students with first generation status had a poorer occupational fit than Asian American students with higher generation status. Moreover, Asian American students with 1.5 generation status and second generation status indicated a similar pattern which may mean that these two groups of students have similar experiences with choice of a major.

Congruence across acculturation levels. The present study used a two dimensional acculturation model. One dimension measured participants' acculturation with American culture and the other dimension measured participants' acculturation with heritage culture. I hypothesized that acculturation level (on both dimensions) is related to major-interest congruence and occupation-interest congruence (Hypothesis 3). To test this hypothesis, the acculturation was first correlated with major-interest congruence and occupation-interest congruence, and results were presented in Table 10. As shown in Table 10, neither the major-interest congruence nor occupation-interest congruence was significantly related to acculturation with the combined male and female samples. However, male participants' results showed that two out of three indices (C index, M index) for occupation-interest congruence significantly correlated ($r = .29$, $p = .02$ for the C index; $r = .29$, $p = .02$ for the M index) with acculturation to American culture. This result suggested that the higher the reported acculturation with American culture the

better the occupation-interest fit for male students. One of occupation-interest congruence index (M index) was significantly correlated (r = .39, p = .00) to acculturation with heritage culture among male students. This result suggests that a higher acculturation with Asian culture also presented a better occupation-interest fit for male students. These two significant results for male students may together suggest that the higher the acculturation (no matter with Asian or American culture) the better the occupation-interest fit for male students. Moreover, only one of major-interest congruence index (FLHD index) was significantly (r = -.20, p = .02) correlated with acculturation with American culture for the Asian American female students. This result indicates that the lower the acculturation with American culture the better the major-interest fit for female students.

An additional analysis was conducted to explore the effect of acculturation on choice of major vs. choice of occupation. The acculturation scores on both dimensions were converted from a continuous variable to a categorical variable. Participants' total score on the acculturation scale was classified into three levels. Those who scored within the bottom third of the possible range for the measure were classified as the low acculturation group. Those in the middle third were classified as the average acculturation group. Those in the top third were classified as the high acculturation group. The mean scores of congruence indices across different acculturation levels were plotted and shown in Figure 5 and Figure 6. Figure 5 shows the congruence indices across participants' heritage acculturation (acculturation with Asian culture), and Figure 6 shows the congruence indices across participants' American acculturation.

As shown in Figure 5(a), 5(b), and 5(c), three indices for major-interest congruence illustrated a similar pattern. The highest major-interest congruence was observed in students who had low acculturation level to Asian culture. Students who had middle and high level of acculturation to Asian culture appeared to yield similar major-interest congruence and hit a low level of congruence. Figure 5(d), 5(e), and 5(f) presented an opposite pattern for occupation-interest congruence across acculturation levels. Students with low acculturation level to Asian culture indicated the lowest occupation-interest congruence, and students with middle and high acculturation level yield similar results and hit a high level of occupation-interest congruence. These results were consistent with the correlation results.

When comparing major-interest congruence and occupation-interest congruence with the same congruence index (FLHD index for example), students who have a low level of Asian acculturation showed a large discrepancy between two types of congruence (major-interest congruence and occupation-interest congruence), and students with middle or high level of Asian acculturation showed consistency between major-interest congruence and occupation-interest congruence. The other two indices also showed a similar pattern. This finding may suggest that Asian American students who have low acculturation with Asian culture may tend to choose a major that matches with their interests and then choose a different occupation when other considerations later take prevalence. In contrast, students who have middle or high acculturation with Asian culture may start from the very beginning to choose a major that they may continue pursuing as their later occupation, and this major/occupation may be a compromise

between their interests and other considerations such as family obligation or/and perceived opportunities.

Students' acculturation with American culture was also examined to determine whether congruence differed across acculturation levels. As shown in Figure 6(a), 6(b), and 6(c), two out of three indices (FLHD index, C index) for major-interest congruence illustrated a similar pattern while the third index (M index) displayed a slightly different pattern. The highest major-interest congruence was observed in students who have a middle level of American acculturation. The lowest major-interest congruence was observed among students who either have a high or low acculturation with American culture. Figure 6(d), 6(e), and 6(f) presented a consistent yet slightly different pattern for occupation-interest congruence across acculturation levels. Three indices agreed on the tendency that students with a middle level of acculturation with American culture illustrated the highest occupation-interest congruence, and students with a low level of acculturation with American culture had the lowest occupation-interest congruence.

It was notable that occupation-interest congruence yielded a wider range of values than that of major-interest congruence. For example, major-interest congruence with FLHD index ranged from 2.92 to 3.15 and occupation-interest congruence with FLHD index ranged from 1.75 to 3.10. This pattern was observed in other two congruence indices as well. In addition, an impression on Figure 6(a) to 6(f) was that students with middle acculturation level to American culture always had the highest congruence for major-interest congruence and occupation-interest. Moreover, two out of three indices (FLHD index, C index) agreed: (a) major-interest congruence was higher than

occupation-interest congruence for students with a low level of American acculturation, and (b) major-interest congruence and occupation-interest congruence were consistent for students with middle and high level of American acculturation.

An ANOVA was performed to determine whether or not the observed differences among mean scores of congruence indices were statistical significant. The least squares and maximum likelihood estimators approach was used. The *F*-test for equality of factor level means was conducted. The *F*-test for major-interest congruence and occupation-interest congruence yielded no statistically significant results across acculturation levels with Asian culture. In testing acculturation levels with American culture, the *F*-test for major-interest congruence was not statistically significant, but the *F*-test for occupation-interest congruence indicated statistically significant result (F [2, 204] = 3.61, p = .03) for the FLHD index. A post hoc test was conducted only on occupation-interest congruence to further examine factor level effects. The Bonferroni multiple comparison procedure was selected to use to minimize type I error. The results of comparing and testing the difference of mean scores across each level of American acculturation are summarized in Table 11. As shown in Table 11, the FLHD index, but not the other two indices, indicated statistically significant results. The mean score of occupation-interest congruence of students with low level of American acculturation was significantly (p = .03) different from that of student with middle level of American acculturation.

Correlation Between Congruence and Variables

The present study also examined how occupation-interest congruence is directly associated with three main variables: intergeneration conflicts, family obligation, and perceived opportunity. I hypothesized that intergeneration conflict, family obligation, and perceived opportunity have a negative association with occupation-interest congruence (Hypothesis 4, 5, 6). The present study examined the association between each subscale of intergeneration conflict (intergeneration conflict on career/major related beliefs, intergeneration conflict on general developmental tasks, family acculturation conflict) with occupation-interest congruence.

Correlation across genders. The correlations between congruence and intergeneration conflicts, family obligation, and perceived opportunity are presented in Table 12. As shown in the left column of Table 12, congruence is not related to intergeneration conflicts, family obligation, and perceived opportunity with the total sample. Only when male participants examined separately are the correlations statistically significant.

The middle columns of Table 12 show the correlations for male participants and the right columns of Table 12 show the correlations for female participants. Male participants showed several statistical significant results while none of results for female participants reached statistical significance. More specifically, as shown in the middle columns of Table 12, occupation-interest congruence was significantly correlated (r = .26, p < .05, M index) with student's belief on career/major related values, meaning that the

greater the students valued the belief that they can use their career/major to help their family the better the fit between occupation and interest for males.

In addition, occupation-interest congruence was significantly negatively correlated with family acculturation conflict across all indices for male students. The correlation coefficients ranged from -.28 (p = .03) to -.36 (p = .00) indicating that the more severe the family-acculturation conflict the lower occupation-interest congruence.

Finally, occupation-interest congruence was significantly correlated (r =.41, p < .01, M index) with family obligation among male students, meaning that a better occupation-interest fit was observed in male students who showed a greater perceptions of family obligation. This result was opposite to the hypothesis that family obligation functions as a barrier to Asian American students' career choice. Instead, this result supported the argument that family obligation functions as a positive contributing factor to career choice among Asian Americans. One explanation is that male Asian American students may internalize the value and obligation of helping family when they grow up and then treat those occupations that match with their family's expectations/interest as their own interest. More discussion is followed in the discussion section.

In summary, compared to female Asian American students, male Asian American students are more likely to be impacted by intergeneration conflict when they choose their career/major. Significant correlations were found between occupation-interest congruence and intergeneration conflict and between occupation-interest congruence and family obligation only for male participants. These relationships mirror the observation that male Asian Americans have greater pressure than female Asian Americans to take on

the role of following tradition, obeying parents, and bringing up family status (Liu & Chang, 2007).

Correlation across RIASEC occupations. Participants reported their expected occupation, which was further coded into the RIASEC model. Participants were then sorted into RIASEC categories based on the first letter code of their preferred occupation. The correlation coefficients for each RIASEC category was calculated and tested for statistical significance. Table 13 presented the correlation results for participants in the Social, Enterprising, and Conventional occupations.

As shown in the middle column of Table 13, occupation-interest congruence was significantly negatively correlated (r =-.33, p < .05, C index) with intergeneration conflict on career/major related values for students with Enterprising occupation, meaning that the greater the intergeneration conflict on career/major related values the poorer the occupation-interest fit. Moreover, occupation-interest congruence was significantly positively correlated (r =.34, p < .05, FLHD index; r =.36, p < .05, C index; r =.43, p < .01, M index;) with self belief on career/major related values for students with Enterprising occupation, meaning that the greater the students value the belief that they need to help family with their careers/majors the better the occupation-interest fit.

As shown in the right column of Table 13, occupation-interest congruence was significantly negatively correlated (r = -.70, p < .05, C index; r = -.80, p < .01, M index;) with intergeneration conflict on general developmental tasks for students with Conventional occupation, meaning that the greater the intergeneration conflict on general developmental tasks the poorer the occupation-interest fit. Moreover, all correlation

coefficients across indices (*r* ranged from -.64 to -.86; *p* ranged from .00 to .04, accordingly) consistently indicated that occupation-interest congruence was significantly negatively correlated with family acculturation conflict for students with Conventional occupation, meaning that the greater the family acculturation conflict the poorer the occupation-interest fit.

As shown in the left and middle column of Table 13, occupation-interest congruence was significantly positively correlated (r =.35, $p < .01$, M index; r = .30, $p < .05$, FLHD; r = .38, $p < .05$, M index) with family obligation in students who have Social or Enterprising occupation, meaning that the greater the students perceived family obligation the better the occupation-interest fit, and this result was particularly observed in students who expected to take Social or Enterprising type of occupations.

Finally, as shown in the right column of Table 13, occupation-interest congruence was significantly negatively correlated (r = -.63, $p < .05$, C index) with perceived opportunity in students with Conventional occupation, meaning that the greater the students perceived limited opportunities the poorer occupation-interest fit. This may suggest that Asian American students choose to take Conventional occupation although these occupations may not match with their interests because they perceive that Asian Americans have limited occupational opportunities and Conventional occupation is the area that has opportunities for Asian Americans.

In summary, Asian American students who preferred Social, Enterprising, and Conventional occupations had statistically significant correlations between occupation-interest congruence and three main variables of intergeneration conflict, family obligation,

perceived opportunities. Students who preferred Social and Enterprising occupations, compared to students with other occupations, are impacted more by family obligations. Students who preferred Enterprising occupations, compared to students preferred other occupations, may be impacted more by intergeneration conflicts on career/major related value, self belief on helping family with their career/major, and family obligation. Students who preferred Conventional occupation may be impacted more by intergeneration conflict on general developmental tasks, family acculturation conflict, and perceived opportunity.

Correlation across current RIASEC majors. In the present study, participants reported their major, which was RIASEC coded. Participants were then sorted into RIASEC categories based on the first letter code of their major. The correlation coefficients for each RIASEC category was calculated and tested for statistical significance. Table 14 presented the correlation results for participants in Investigative, and Social majors, in which correlation coefficients achieved statistical significance.

As shown in the middle columns of Table 14, occupation-interest congruence was significantly negatively correlated (r = -.21, p < .05, FLHD index; r = -.21, p < .05, C index; r = -.20, p < .05, M index) with perceived parents' career/major related value among students with Investigative occupation, meaning that the greater the students believe that their parents think that they need to help family with their career the poorer the occupation-interest fit. This result suggests that Asian American students who have Investigative major may choose their occupations based on family expectations rather than their individual interests. As shown in the right column of Table 14, occupation-

interest congruence was significantly negatively correlated (r = -.42, p < .05, FLHD index) with intergeneration conflicts on career/major related values among students who had Social major, meaning that the greater the intergeneration conflicts on career/major related values the poorer the occupation-interest fit.

In summary, Asian American students who are in Investigative and Social majors indicate significant correlations between occupation-interest congruence and three main variables (intergeneration conflict, family obligation, perceived opportunities). Students who have Investigative major may choose their major/career based on their parents' expectations or family mission because they believe that their parents expect them to help family with their career. Students who have Conventional major, compared to student with other majors, are impacted more by intergeneration conflicts on career/major related values.

Correlation across parents' education. In the present study, participants were asked whether or not their parents had education in the U.S. Participants were then sorted into 2 groups: parents had no American education vs. parents had American education. The correlation coefficients for each groups was calculated and tested for statistical significance. Table 15 presented the correlation results and highlighted correlation coefficients that achieved statistical significance.

As shown in the middle columns of Table 15, occupation-interest congruence was significantly positively correlated (r = .21, p < .05, C index; r = .28, p < .01, M index) with family obligation among students whose parents had education in the U.S., meaning that a better occupation-interest fit was observed among students who perceived a greater

family obligation. As shown in the right columns of Table 15, occupation-interest congruence was significantly negatively correlated (r = -.22, p < .05, C index) with intergeneration conflicts on general developmental tasks among students whose parents did not have education in the U.S., meaning that the greater the intergeneration conflict the poorer the occupation-interest fit. Moreover, as shown in the right columns of Table 15, occupation-interest congruence was significantly negatively correlated (r = -.21, p < .05, FLHD index; r = -.26, p < .05, C index) with perceived opportunity among students whose parents did not have education in the U.S., meaning that the greater the perceived limited career opportunities the poorer the occupation-interest fit.

In summary, these results suggest that Asian American students whose parents had education in the U.S., compared to those whose parents did not have American education, are impacted more by family obligation when choosing their occupations. In the contrary, students whose parents did not have American education are impacted more by perceived opportunity and intergeneration conflict than those whose parents had American education.

Summary With Highlighted Results

1. Asian American students are highly represented in Investigative and Enterprising majors and occupations, and are well represented in Social majors and occupations in the present data set. These findings are different from the pattern observed about 10 years ago, in which Asian American students were reported to be overly represented in Realistic majors and occupations but not in Social majors and occupations.

2. Significant gender differences were found. Compared to males, females perceive their parents having stronger belief that young generations should help

family with their careers. Females perceive more severe family acculturation conflicts than males. In addition, the occupation-interest fit was significantly correlated to intergeneration conflicts and family obligation for males but not females.

3. Asian American students' major-interest congruence varied across RIASEC majors. Congruence was significantly higher in atypically represented majors (Artistic, Social major) than in traditionally over represented majors (Realistic, Investigative, and Enterprising major). Hypothesis 1 was supported.

4. Occupation-interest congruence varied across generation status. First generation students' occupation-interest congruence was lower than that of other generations. Hypothesis 2 was supported.

5. Occupation-interest congruence varied across acculturation. Based on correlation results, the higher the acculturation (no matter with Asian or American culture) the better the occupation-interest fit for male students. The lower the acculturation with American culture the better the major-interest fit for female students. Based on *F*-test results, occupation-interest congruence was significantly different across levels of acculturation with American culture. Based on a visual display, students with a middle level of acculturation with American culture illustrated the highest occupation-interest congruence, and students with a low level of acculturation with American culture hit the lowest occupation-interest congruence. Hypothesis 3 was partially supported.

6. Intergeneration conflicts on major/career related values were significantly related to occupation-interest congruence in a negative direction for those participants that have the following characteristics: Social majors, or preference for Enterprising occupations. Hypothesis 4 was partially supported.

7. Intergeneration conflicts on general developmental tasks significantly correlated to occupation-interest congruence in a negative direction for those students that have following characteristics: male, or preference for Conventional occupations, or parents not educated in the U.S. Hypothesis 4 was partially supported.

8. Family acculturation conflicts significantly correlated to occupation-interest congruence in a negative direction for those students that have following characteristics: male, or preference for Conventional occupations. Hypothesis 4 was partially supported.

9. Family obligation significantly correlated to occupation-interest congruence in a positive direction for those participants that have following characteristics: male,

or preference for Enterprising or Social occupations, or parents educated in the U.S. Hypothesis 5 was not supported. The results showed that family obligation is a positive contributing factor to occupation-interest fit.

10. Perceived opportunity was significantly correlated with occupation-interest congruence in a negative direction for those participants that have following characteristics: preference for Conventional occupations, or parents not educated in the U.S. Hypothesis 6 was partially supported.

Chapter IV

Discussion

The present study aimed at advancing our understanding of the occupation segregation reported by previous studies and examining the association between family variables and Asian American college students' career choices. I attempted to answer three main questions: (a) Is occupation segregation observed in the current data set? If so, is the observed pattern presented in the same way as that of previous studies? (b) Does interest-choice congruence differ across types of majors or occupations? (c) Do family factors impact choice-interest congruence? In addition, interest-choice congruence and association between interest-choice congruence and family factors were examined across gender, acculturation level, generation status, types of majors/occupations, and parents' education background.

Occupation Segregation

Previous literature showed that Asian Americans excel in technically related occupations and prefer technical occupations (Leong & Serafica, 1995; Leong & Gupta, 2007; Tang et al., 1999), which lead to the fact that science, technical, and professional occupations are overly represented by Asian Americans. Moreover, Asian Americans are under represented in entertaining, artistic, and labor type of occupations (Leong & Serafica, 1995; Leong & Gupta, 2007; Tang et al., 1999). Business or enterprising occupations have gradually increased the numbers of Asian Americans, although early data indicated that sales related occupations had a smaller representation of Asian

Americans. The present study, generally speaking, showed a similar pattern with this trend of occupation segregation. The top three most selected majors among participants in the present study are Investigative major (53.8%), Enterprising major (20.5%), and Social major (12%). Self preferred occupations presented a similar trend. The top three most preferred occupations are Investigative occupation (32.5%), Enterprising occupation (22.1%), and Social occupations (24.1%).

As expected, Investigative and Enterprising majors/occupations are the leading areas, which matched the historically observed trend. Social majors/occupations became the third leading area in the current data, which was different from the historical trend that Asian American students are less likely to choose a social science major/occupation. Interestingly, the present data set also showed that fewer students chose Realistic majors and occupations. Only 4% of students were in Realistic majors and 2% expected to enter a Realistic occupation. These results indicated that the basic trend of occupation segregation is observed in the current data with a lightly different switch. I suspect that nowadays Asian American students are more willing to choose Social major/occupation but less driven to choose Realistic major/occupation. However, given the fact that the current data may not be a well representative sample for the whole Asian American population, a better represented sample is needed to further examine this possible new trend carefully.

Major/Occupation Congruence and Relative Functionalism

One of major hypotheses in the present study was that students in majors in which Asian Americans are traditionally perceived to be successful may present lower congruence than that of those students who are in atypical majors because students in traditionally overrepresented major are more likely than students in atypical majors to choose majors based on survival considerations rather than vocational interest. The results of present study support this hypothesis. Significant differences of major-interest congruence were found between Realistic, Investigative, Enterprising major vs. Artistic and Social major. This means that major-interest congruence was significantly different between traditionally represented majors (Realistic, Investigative, and Enterprising majors) and atypically represented majors (Artistic and Social majors). More specifically, major-interest congruence was higher in atypical represented majors than in traditionally represented majors. Mean scores of major-interest congruence across RIASEC majors ranking from the lowest to highest were: Realistic, Enterprising and Investigative, Social and Conventional, and Artistic.

This finding matched with arguments made by early studies. Sue and Frank (1973) suggested that children from Asian immigrant families are often encouraged to pursue occupations that best help them to survive in the U.S. society and to avoid those occupations that bring them direct contact with racial and cultural discriminations. Moreover, Leong (1991) suggested that compared to European American students Asian American students tend to place a higher value in selecting major/occupations that provide prestige, income, and social status, which function as a strategy to attain upward

mobility and survival. This survival strategy can motivate Asian Americans to give up their vocational interest and pursue majors/occupations that provide them security and opportunities, which in turn impacts their interest-choice congruence.

In addition, the argument of perceived limited opportunity would impact Asian American students' career choice was also supported by the results of present study. In the present study, occupation-interest congruence was significantly negatively correlated to perceived opportunity (the greater the perceived limited opportunity, the lower the occupation-interest fit) for students who have a Realistic major, or prefer Conventional occupation, or parents not educated in the U.S. This may suggest that Asian American students may pursue occupations that they perceived to have greater opportunities even in the price that the chosen occupation may not necessarily match with their interest, and this effect is particularly held true for students with above characteristics. Realistic and Conventional occupations are areas Asian Americans traditionally entered, and these areas are perceived to have more opportunities for Asian Americans. Moreover, Asian immigrant parents who did not have education in the U.S. perceive limited opportunity in their career, which may in turn impact the way they influence their children when choosing majors/occupations.

Relative functionalism proposed by Sue and Okazaki (1990) further shed some lights on explaining these findings. Sue and Okazaki (1990) in their study on academic achievement of Asian American students discussed the need of mobility and survival among Asian Americans. They argued that Asian Americans' educational attainments are greatly impacted by the opportunities present for upward mobility. Asian Americans

experience/perceive limited mobility in many areas where success does not heavily reply on education. Several examples of such areas are sport, politics, and entertainment. When mobility is limited in these areas, Asian Americans try to avoid these areas. A great number of Asian Americans chose to enter education-dependent occupations to have a higher chance of upward mobility. Sue and Okazaki called it relative functionalism. I believe that a bi-product of relative functionalism is that Asian American students may not choose their majors primarily based on their interest because their interest may lead them to areas with limited opportunity/mobility for Asian Americans. Factors, such as perceived opportunities, may become more important than interest in the decision making process. Occupation segregation, thus, emerges as a result of survival.

Given the concept that relative functionalism helps to explain occupation segregation, it is also possible that the segregated occupations may change when the opportunity of upward mobility change along with the societal structure. Sue and Okazaki (1990) presented a nice and condensed overview of societal changes over years and its impact in Asian American community. They summarized that in 1940s Asian American was discriminated and refused union membership which functioned as a block for Asian American's career path. Also, in general, Asian immigrants at that time perceived career limitations and, therefore, avoid those fields such as the social sciences and humanities, in which English facility and interpersonal skills specific to American society are needed. After World War II the technological advancements and an expanding economy required educated professionals and white collar employees, which opened another door for Asian Americans. Mathematics and sciences are more likely to

emphasize technical competence, which presented an opportunity to Asian Americans. From a relative functionalism perspective, pursuing higher education and acquiring relevant skills serve the goals of upward mobility, and thus, motivate Asian American to take action. Nowadays, increased opportunities for upward mobility make education a less emphasized avenue for mobility. I believe that with a new focus on globalization, social movement for diversity, and emergence of role models in social science, Asian Americans may perceive more upward mobility in areas where opportunities are traditionally limited for Asian Americans, which will in turn impact their choice of education attainment and career path. More studies are needed to identify and shed light on this possible new trend of occupation segregation.

Family Impact on Career Choice

The present study chose family impact as cultural specific factor for Asian Americans and examined the association between different family variables (intergeneration conflict, family obligation) and interest-choice congruence. The intergeneration conflict was broken down into three components: intergeneration conflicts on career/major related values, general conflicts, and family acculturation conflict. Parents' education background was also considered when examine the association between congruence and family variables. It was hypothesized that the more intergeneration conflict the lower choice-interest congruence. In addition, the more perceived family obligation, the lower choice-interest congruence.

The results of present study, generally speaking, partially supported these hypotheses. As expected, occupation-interest congruence was negatively correlated with intergeneration conflicts on career/major related values, general conflicts, and family acculturation conflicts. It was notable that correlation coefficients were not statistical significant with the total data set, but statistical significance were found in male sample. In other words, gender differences were found when examining family factors with interest-choice congruence. This result suggested that family's impact on Asian Americans' career choice is tempered by gender variable. Family factors and gender variable should be considered together in understanding Asian American's career choice. More discussion of gender difference and family impacts on choice-interest congruence are presented in the next section.

Interesting finding is that the occupation-interest congruence was positively correlated to family obligation, which was opposite to the hypothesis (the more perceived family obligation, the lower occupation-interest congruence). Nevertheless, Yee et al. (2007) argued that family obligation can function both as a protective factor or a risk factor for Asian Americans. On one hand, family obligation facilitates family interdependency which can provide a powerful resource for Asian Americans. On the other hand, family obligation creates a source of stress and may lead to the decision of sacrificing one's interest to achieve family's interest. Thus, the present study raised a question at the very beginning of whether family obligation function as a barrier or as a support to interest-choice congruence? The results of the present study demonstrated that family obligation facilitated occupation-interest congruence, supporting the argument that

family obligation functions as a positive contributing factor rather than barrier to Asian American's occupational congruence. It seemed that family obligation provides a strong motivation to succeed for the good of one's family. I suspected that Asian American students may internalize their family obligation and translate it into their own expectation in the early stage of career development. Therefore, family's needs/interests were developed into their own interests. More studies are needed to further shed lights on this finding.

Gender Difference

Gender differences were found when examining the association between occupation-interest congruence and family variables (intergeneration conflicts, family obligation). Significant correlations were found between occupation-interest congruence with intergeneration conflict and with family obligation for male participants but not female participants. The statistically significant results indicated that, for male students but not female students, the higher the intergeneration conflict the poorer the occupation-interest fit, and the higher the family obligation (or stronger self belief on helping family) the better the occupation-interest fit. Moreover, compared to female students male students showed significant relation between occupation-interest congruence and self belief on major/career related values. In other words, the greater male students believe that their career can help family to achieve upward mobility, the better the occupation-interest fit. This result was consistent with the finding that the greater perceived family obligation the better occupation-interest fit for male students. Also, family acculturation

conflict were significantly negatively correlated to occupation-interest congruence for male participants but not female participants, suggesting that the more severe of family acculturation conflict, the lower the occupation-interest fit.

In summary, these above results suggested that compared to female Asian American students, male Asian American students are more likely to be impacted by intergeneration conflict and family obligation when they choose their career/major. This result matched with the observation that male Asian Americans are assuming greater family responsibilities than their female counterparts (Yee et al., 2007), and matched with the argument that Asian American men tend to be more conforming, more obedient to authority, and more connected to family control (Leong & Gupta, 2007).

Nguyen and Huang (2007) pointed out that Asian American parents in general are restrictive on the children's independence of social activities and occupational choice. It is believed that Asian American men are brought up under strict gender role expectations, and certain cultural values such as group harmony and filial piety, prominence in the family, risk taking, and courageous behavior, are emphasized in the development process (Liu & Chang, 2007). Liu and Chang further pointed out (2007) that Asian American men are expected to fulfill their filial duties, such as maintaining family name, conforming to the expectations of their parents, and carrying on culture and traditions. In contrary, Asian American parents are more restrict to their female children on dating and marriage (Yee et al., 2007), and may be less restrict on their career choice.

Limitations of the Study and Future Research

The present study confirmed that intergeneration conflict, family obligation, gender, perceived opportunities, and acculturation impact Asian American students' career choice and interest-choice congruence. With all these variables we are painting a clearer picture of culturally specific framework for Asian American students' career choice. Occupation segregation still exists with a possibly slight shift in segregated areas. Gender difference along with family variables continue to be of important factors that impact Asian American students' actual career choice and interest-choice congruence. Contextual variables, such as perceived opportunities and acculturation, were confirmed to impact Asian Americans' career development and career choices. The concept of adaptive culture or relative functionalism shed lights on explaining occupation segregation and on explaining the lack of direct association between vocational interest and career choice in Asian American population. However, the study of Asian American's career development and family impacts on career choices is still far beyond completed. The present study indicated several limitations.

First of all, the data was primarily collected through one west-coast university and Asian American audience that viewed a national website on a specific period of days. The data may not efficiently represent Asian American population in general. Although participants showed an age range from 18-45 in the present study, the target participants were still college students. Moreover, less achieved Asian Americans and those who did not make to college were barely included in the study due to the data collection

approaches. Therefore, the results and conclusions in the present study may not be generalized to Asian American population in general.

Secondly, as a common limitation in other ethnic research, the present study was unable to collect a large enough sample for each sub-ethnic group within Asian American population as well as balance other diversity variables. The majority of participants (45.8%) in the present study were Chinese American. It followed by Korean, Filipino, and Vietnamese American. However, Asian American has a tremendous diversity within the populations including country of origin difference, immigration status difference, acculturation difference, and generational difference. Nguyen & Huang (2007) argued that there are 28 ethnic groups within Asian American populations. In terms of the generational difference, the term Asian American consists of Hmong who are relatively recent immigrants, while the term Asian American also consists of Japanese, many among whom are already the fifth generation or beyond in the U.S. The reasons of immigration also vary within the group. All above diversities make it hard to use the Asian American as a homogenous group when examining their career choices. Therefore, the generalization of present study results was affected, and the inference needs to be made cautiously.

Finally, the present study was focused on examining a few family variables and other contextual variables, and the list of cultural variables that may impact Asian American's career choice was not complete. Some other variables may need to be included in future research in addition to cultural specific variables that had been already included in the present study. For example, based on several observations in the present

study, prestige is another variable that may greatly impact Asian American students' career choice. For another example, Reeve and Heggestad (2004) described a gravitational effect to explain the decision a person made to choose their jobs and possible mobility of their jobs. They pointed out that, in addition to interest, individuals make decision also on how their cognitive abilities matches with the jobs. In other words, if their interests match with job environment (high vocational congruence) but their cognitive abilities do not match with job requirement, individuals will chose to move their jobs and they call this effect as gravitation effect. This concept may further provide supplementary explanations on why Asian American students' career choices do not directly associate with their interest. Longitudinal research is also needed to further examine how Asian Americans' decision may change across the time, such as across college years or life span.

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Appendix A

Figures

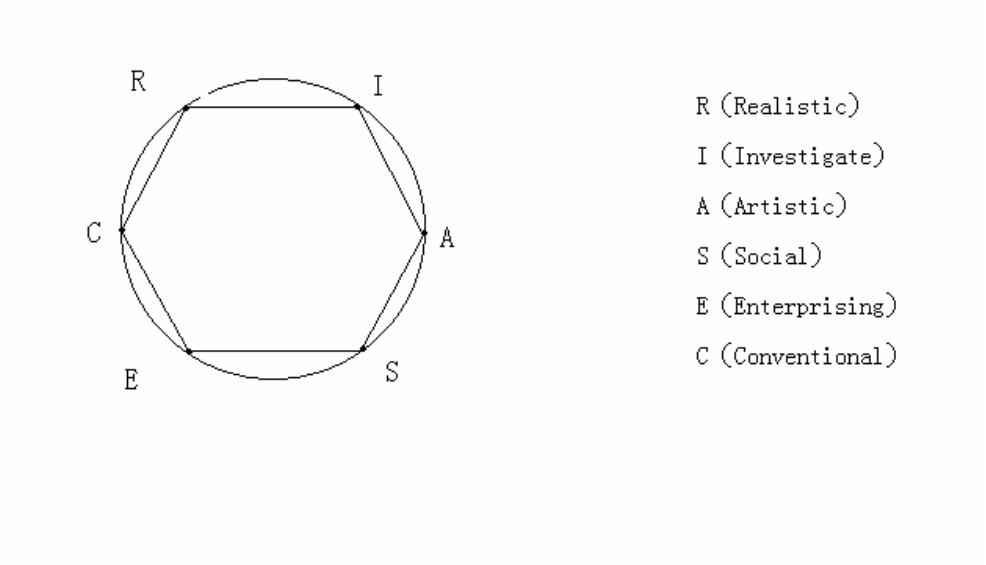
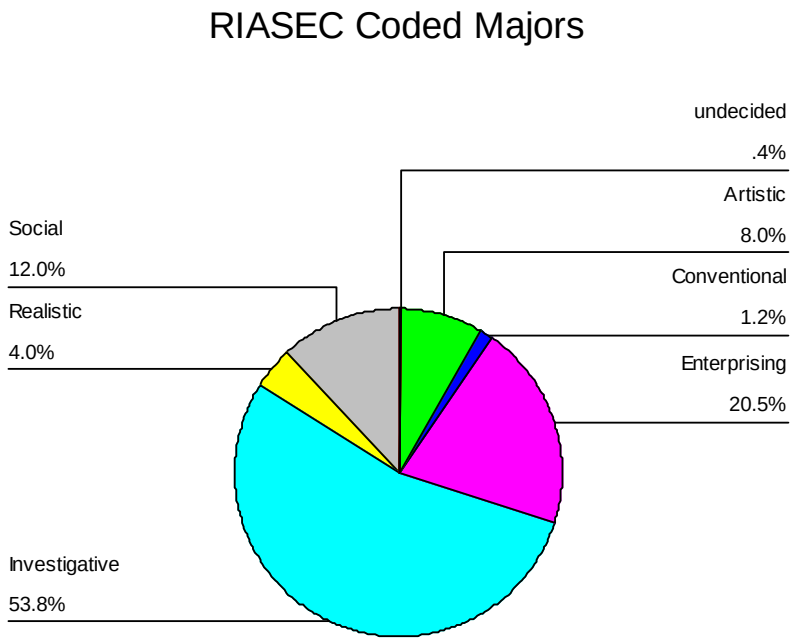
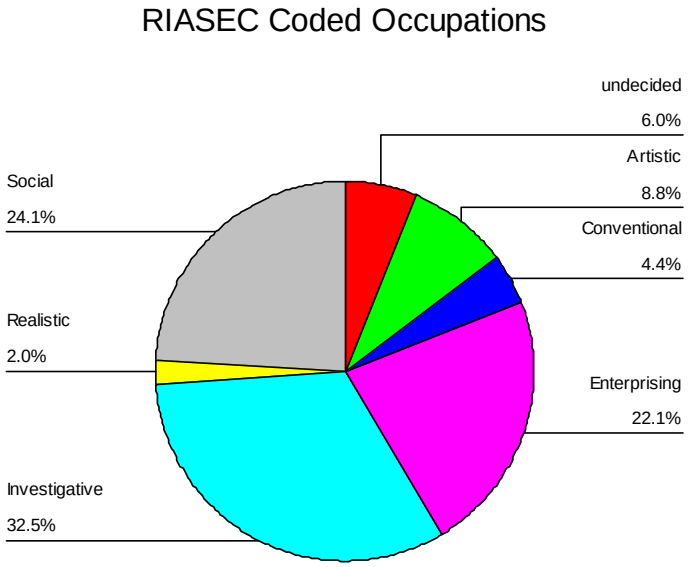


Figure A1. Holland's Hexagonal Model.

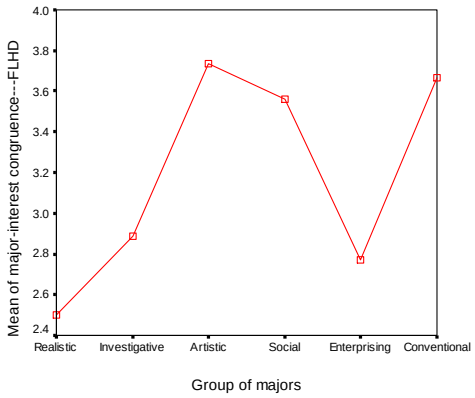


A2(a). Percentage of RIASEC Majors

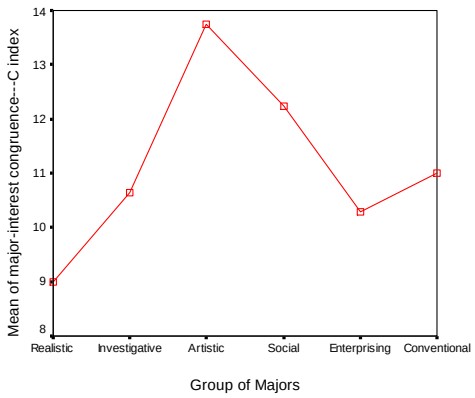


A2(b) Percentage of RIASEC occupations

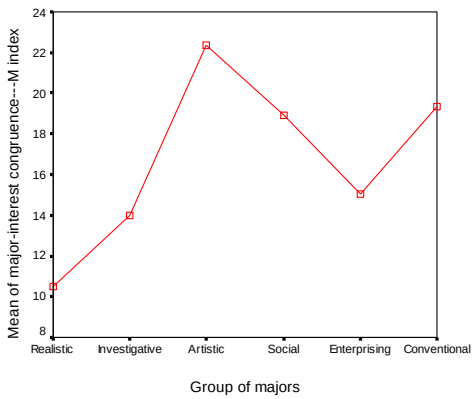
Figure A2. Percentage of RIASEC Majors/Occupations



A3(a). Mean of major-interest congruence across RIASEC majors with FLHD index

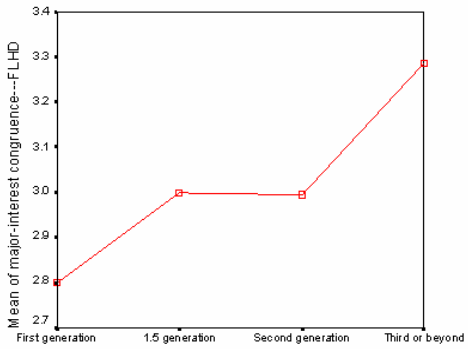


A3(b). Mean of major-interest congruence across RIASEC majors with C index

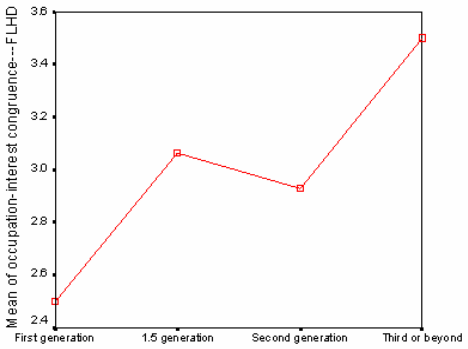


A3(c). Mean of major-interest congruence across RIASEC majors with M index

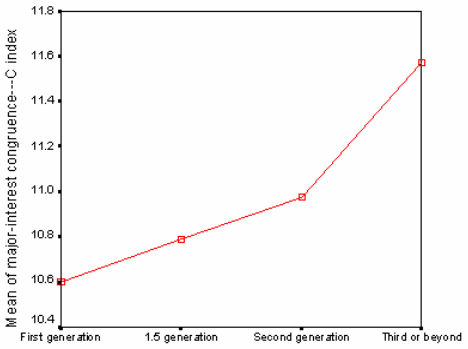
Figure A3. Mean of Major-Interest Congruence across RIASEC Majors



A4(a). Mean of major-interest congruence with FLHD index.



A4(d). Mean of occupation-interest congruence with FLHD index.



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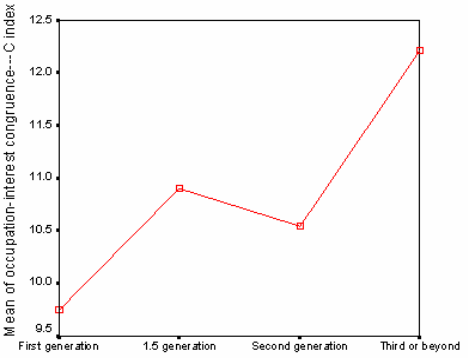
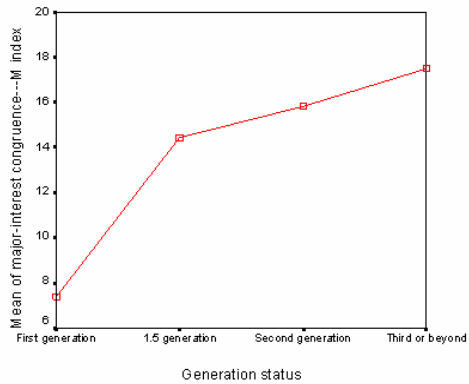
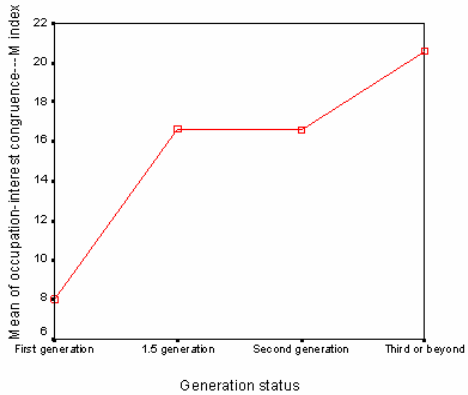


A4(e). Mean of occupation-interest congruence with C index.

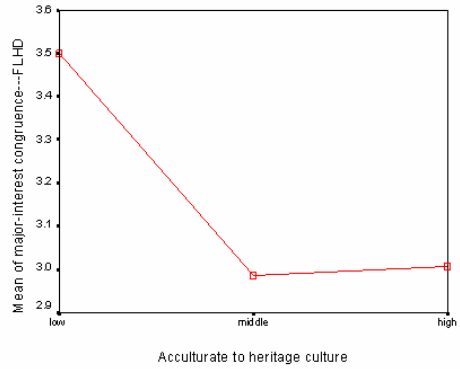


A4(c). Mean of major-interest congruence with M index.

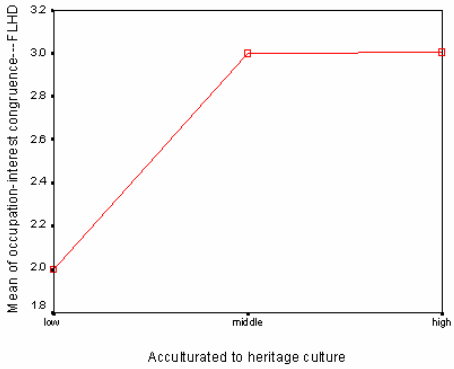


A4(f). Mean of occupation-interest congruence with M index.

Figure A4. Mean of Congruence across Generation Status



A5(a). Mean of major-interest congruence with FLHD index



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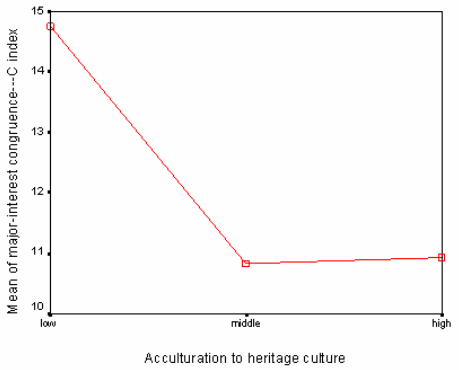

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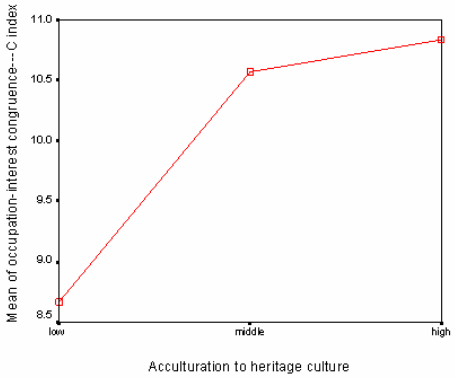
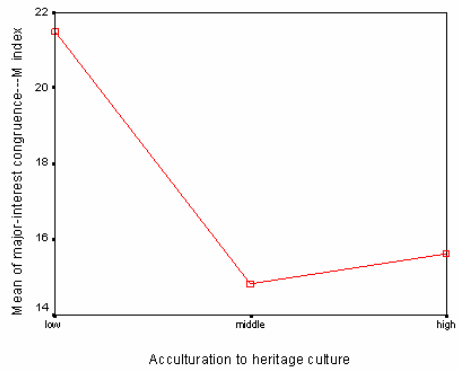
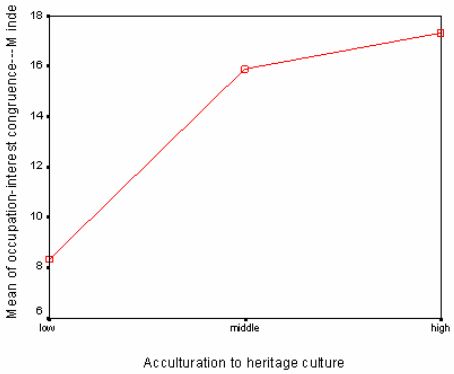


A5(e). Mean of occupation-interest congruence with C index

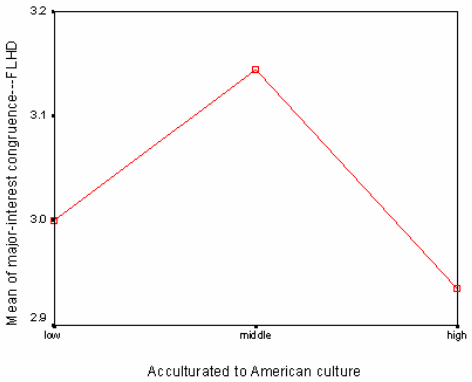


A5(c). Mean of major-interest congruence with M index

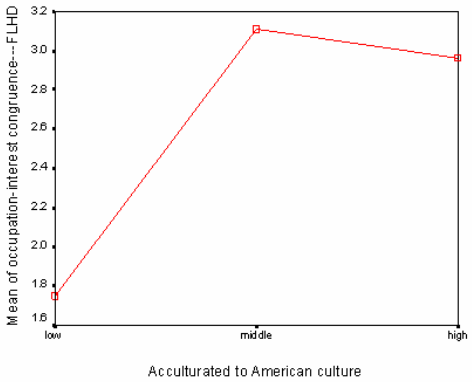


A5(f). Mean of occupation-interest congruence with M index

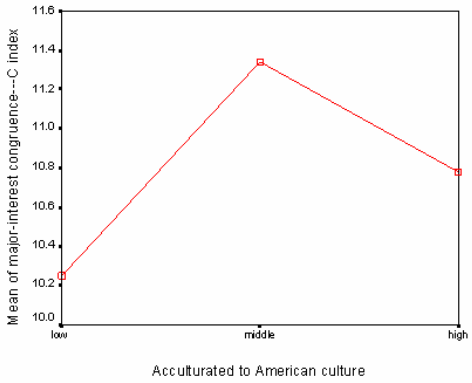
Figure A5. Mean of Congruence across Asian Acculturation



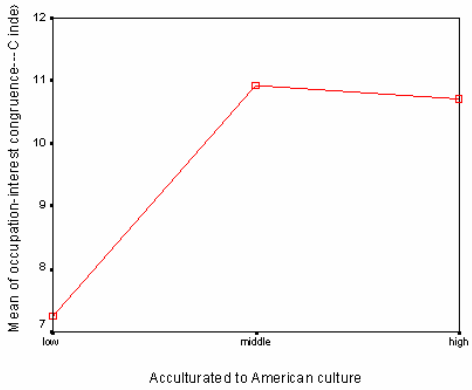
A6(a). Mean of major-interest congruence with FLHD index



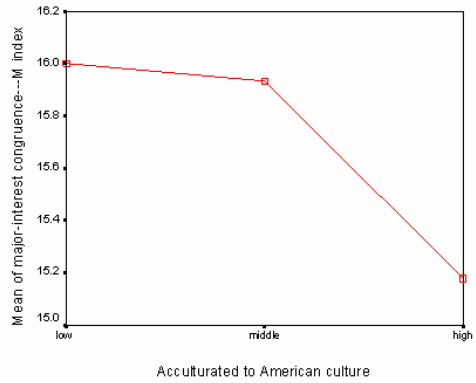
A6(d). Mean of occupation-interest congruence with FLHD index



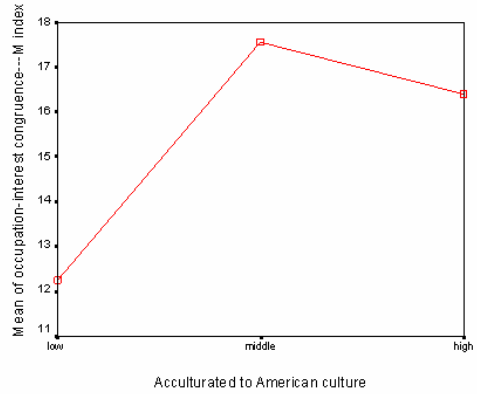
A6(b). Mean of major-interest congruence with C index



A6(e). Mean of major-interest congruence with C index



A6(c). Mean of major-interest congruence with M index



A6(f). Mean of major-interest congruence with M index

Figure A6. Mean of Congruence across American Acculturation

Appendix B

Tables

Table B1

Participants' Cultural Heritage

		Frequency	Percent
Identified single cultural heritage			
1	Chinese	114	45.78
2	Korean	28	11.24
3	Filipino	21	8.43
4	Vietnamese	20	8.03
5	Taiwanese	15	6.02
6	Japanese	9	3.61
7	Indian	7	2.81
8	Hmong	6	2.41
9	Thai	5	2.01
10	Cambodian	3	1.20
11	Chinese/Vietnamese	3	1.20
12	Laos	3	1.20
13	Indonesian	1	.40
14	Tibetan	1	.40
Identified bi-cultural heritage			
1	Chinese/Filipino	2	.80
2	Chinese/Lao	1	.40
3	Indian/Black.	1	.40
4	Indo-Nepalese Hinduism	1	.40
5	Japanese/polish	1	.40
6	Taiwanese/Japanese	1	.40
Other	(did not specify countries, e.g., Asian, South Asian)	6	2.41
Total		249	100

Table B2

Illustrative Weights for Assessing Agreement Between Two Three-letter Codes

Self expected occupation code (judge 1)	IPSF code (judge 2)		
	First letter	Second letter	Third letter
First letter	22	10	4
Second letter	10	5	2
Third letter	4	2	1

Note. The present table was edited based on the Table 1 provided in the Ichan's (1984) article.

Table B3

Summary Statistics of Measures

Measure	Total			Male			Female			*t*	*p*
	n	M	SD	*n*	M	SD	*n*	M	SD		
Acculturation 1	249	67.95	12.80	76	67.53	13.30	172	68.19	12.70	-.37	.71
Acculturation 2	249	69.28	11.30	76	68.04	12.00	172	69.83	11.10	-1.15	.25
Value 1	247	40.20	7.65	76	38.43	6.83	170	41.09	7.79	***-2.56****	.01
Value 2	247	35.34	7.60	76	34.61	7.94	170	35.74	7.41	-1.08	.28
Conflict 1	247	8.24	6.35	76	8.46	6.47	170	8.18	6.31	.32	.75
Conflict 2	238	19.93	7.46	73	19.25	7.74	164	20.27	7.34	-.98	.33
Conflict 3	226	20.75	9.07	67	18.93	8.35	158	21.59	9.26	***-2.03****	.04
Family Obligation	225	26.94	6.08	67	26.51	6.37	157	27.12	5.98	-.69	.49
Perceived Opportunity	224	11.54	4.38	67	11.70	4.62	156	11.52	4.27	.29	.78

Note. Acculturation 1 = Vancouver Index of Acculturation scale (heritage dimension). Acculturation 2 = Vancouver Index of Acculturation scale (mainstream culture dimension). Value 1 = parents' belief on career/major related value. Value 2 = students' belief on career/major related value. Conflict 1 = subscale of intergeneration conflict on career/major related value. Conflict 2 = general intergeneration conflict with severity measure. Conflict 3 = family acculturation conflict scale with severity measure.

* $p < .05$

Table B4

Correlations of Measures

Measure	1	2	3	4	5	6	7	8	9
1. Acculturation 1	1								
2. Acculturation 2	0.48**	1							
3. Value 1	0.09	0.08	1						
4. Value 2	0.35**	0.18**	0.37**	1					
5. Conflict 1	-0.23**	-0.04	0.23**	-0.50**	1				
6. Conflict 2	-0.13*	-0.10	0.45**	-0.03	0.35**	1			
7. Conflict 3	-0.10	-0.04	0.53**	-0.06	0.47**	0.74**	1		
8. Family Obligation	0.01	-0.14*	0.25**	0.19*	-0.04	0.30**	0.23**	1	
9. Perceived Opportunity	0.36**	0.19**	0.30**	0.62**	-0.34**	0.02	-0.01	0.22**	1

Note. Acculturation 1 = Vancouver Index of Acculturation scale (heritage dimension). Acculturation 2 = Vancouver Index of Acculturation scale (mainstream culture dimension). Value 1 = parents' belief on career/major related value. Value 2 = students' belief on career/major related value. Conflict 1 = subscale of intergeneration conflict on career/major related value. Conflict 2 = general intergeneration conflict with severity measure. Conflict 3 = family acculturation conflict scale with severity measure.

* $p < .05$

** $p < .01$

Table B5

Summary of Two Types of Congruence With Three Congruence Indices

	Total			Male			Female		
	M	SD	n	M	SD	n	M	SD	n
Major-interest Congruence									
FLHD index (range from 1to 4)	3.01	.97	219	3.00	1.03	65	3.02	.95	153
C index (range from 0 to 18)	10.96	3.41	219	10.71	3.51	65	11.10	3.36	153
M index (range from 0 to 28)	15.46	8.23	219	15.71	8.14	65	15.36	8.32	153
Occupation-interest Congruence									
FLHD index	2.99	1.02	207	2.98	.98	62	2.99	1.04	144
C index	10.72	3.84	207	10.29	3.51	62	10.85	3.93	144
M index	16.73	7.84	207	16.27	7.41	62	16.85	8.01	144

Table B6

Correlation Between Congruence Indices

	1	2	3	4	5	6
1. MI Congruence (FLHD)	1					
2. MI Congruence (C)	.78**	1				
3. MI Congruence (M)	.74**	.60**	1			
4. OI Congruence (FLHD)	.34**	.26**	.32**	1		
5. OI Congruence (C)	.21**	.17*	.22**	.85**	1	
6. OI Congruence (M)	.33**	.21**	.44**	.78**	.72**	1

Note. MI Congruence (FLHD) = First letter Holland distance index for major-interest congruence. MI Congruence (C) = C index for major-interest congruence. MI Congruence (M) = M index for major-interest congruence. OI Congruence (FLHD) = First letter Holland distance index for occupation-interest congruence. OI Congruence (C) = C index for occupation-interest congruence. OI Congruence (M) = M index for occupation-interest congruence.
* $p < .05$
** $p < .01$

Table B7

Results of the ANOVA for Congruence Indices Across RIASEC Majors

		Sum of Squares	df	Mean Square	*F*	*p*
Major-interest congruence across RIASEC majors						
FLHD index	Between Groups	25.45	5	5.09	***6.01****	<.001
	Within Groups	180.5	213	.85		
	Total	206	218			
C index	Between Groups	251	5	50.20	***4.69****	<.001
	Within Groups	2281	213	10.70		
	Total	2532	218			
M index	Between Groups	1707	5	341	***5.57****	<.001
	Within Groups	13050	213	61.30		
	Total	14756	218			
Major-interest congruence across academic classes						
FLHD index	Between Groups	11.89	4	2.97	***3.24****	.01
	Within Groups	166.1	181	.92		
	Total	178	185			
C index	Between Groups	119.3	4	29.8	***2.62****	.04
	Within Groups	2059	181	11.4		
	Total	2179	185			
M index	Between Groups	284.8	4	71.2	1.04	.39
	Within Groups	12400	181	68.5		
	Total	12685	185			
Occupation-interest congruence across academic classes						
FLHD index	Between Groups	2.987	4	.75	.73	.57
	Within Groups	172.9	170	1.02		
	Total	175.9	174			
C index	Between Groups	26.15	4	6.54	.46	.77
	Within Groups	2441	170	14.4		
	Total	2467	174			
M index	Between Groups	226.4	4	56.6	.93	.45
	Within Groups	10325	170	60.7		
	Total	10552	174			

Table B8

Mean Comparison Between Each Pair of RIASEC Majors

		FLHD index		C index		M index	
(I) major	(J) major	Mean Difference (I-J)	*p*	Mean Difference (I-J)	*p*	Mean Difference (I-J)	*p*
R	I	-.39	.25	-.65	.17	-3.49	.22
	A	***-.24****	< .001	***-.74****	< .001	***-11.9****	<.001
	S	***-1.06****	.01	***-.24****	.02	***-8.42****	.01
	E	-.27	.44	-1.29	.30	-4.54	.13
	C	-.17	.06	-2.00	.37	-8.83	.10
I	R	.39	.25	1.65	.17	3.49	.22
	A	***-.85****	<.001	***-3.09****	<.001	***-8.38****	<.001
	S	***-.67****	<.001	***-1.59****	.03	***-4.93****	<.001
	E	.12	.46	0.35	.53	-1.05	.44
	C	-.78	.15	-0.35	.85	-5.34	.24
A	R	***1.24****	<.001	***4.74****	<.001	***11.87****	<.001
	I	***.85****	<.001	***3.09****	<.001	***8.38****	<.001
	S	.18	.53	1.50	.13	3.45	.15
	E	***.97****	<.001	***3.45****	<.001	***7.33****	<.001
	C	.07	.90	2.74	.18	3.04	.53
S	R	***1.06****	.01	***3.24****	.02	***8.42****	.01
	I	***.67****	<.001	***1.59****	.03	***4.93****	<.001
	A	-.18	.53	-1.50	.13	-3.45	.15
	E	***.79****	<.001	***1.95****	.02	***3.88****	.05
	C	-.11	.85	1.24	.54	-0.41	.93
E	R	.27	.44	1.29	.30	4.54	.13
	I	-.12	.46	-.35	.53	1.05	.44
	A	***-.97****	<.001	***-3.45****	<.001	***-7.33****	<.001
	S	***-.79****	<.001	***-1.95****	.02	***-3.88****	.05
	C	-.90	.10	-.71	.72	-4.29	.36
C	R	1.17	.06	2	.37	8.83	.10
	I	.78	.15	.35	.85	5.34	.24
	A	-.07	.90	-2.74	.18	-3.04	.53
	S	.11	.85	-1.24	.54	.41	.93
	E	.90	.10	.71	.72	4.29	.36

Note. R = Realistic major. I = Investigative major. A = Artistic major. S = Social major. E = Enterprising major. C = Conventional major.

* $p < .05$

** $P < .01$.

Table B9

Mean Comparison Between Generation Status

		FLHD index		C index		M index	
(I) Generation status	(J) Generation status	Mean Difference (I-J)	*p*	Mean Difference (I-J)	*p*	Mean Difference (I-J)	*p*
Occupation-interest congruence							
1 generation	1.5 generation	-.56	.29	-1.15	.57	***-8.67****	.03
	2 generation	-.43	.40	-.79	.69	***-8.62****	.03
	3 or beyond	-1.00	.08	-2.46	.26	***-12.6****	<.001
1.5 generation	1 generation	.56	.29	1.15	.57	***8.67****	.03
	2 generation	.13	.43	.36	.58	.05	.97
	3 or beyond	-.44	.16	-1.32	.26	-3.9	.10
2 generation	1 generation	.43	.40	.79	.69	***8.62****	.03
	1.5 generation	-.13	.43	-.36	.58	-.05	.97
	3 or beyond	-.57	.05	-1.68	.12	-3.95	.07
3 or beyond	1 generation	1.00	.08	2.46	.26	***12.57****	<.001
	1.5 generation	.44	.16	1.32	.26	3.91	.10
	2 generation	.57	.05	1.68	.12	3.95	.07

* $p < .05$
** $p < .01$.

Table B10

Correlation Between Congruence and Acculturation

Correlations		Total		Male		Female	
		Acculturation 1	Acculturation 2	Acculturation 1	Acculturation 2	Acculturation 1	Acculturation 2
MI Congruence (FLHD)	*r*	-.02	-.09	.06	.10	-.07	***-.20****
	p	(.73)	(.18)	(.66)	(.43)	(.40)	(.02)
MI Congruence (C)	*r*	-.06	-.04	-.04	.08	-.07	-.10
	p	(.38)	(.57)	(.72)	(.54)	(.36)	(.21)
MI Congruence (M)	*r*	-.03	-.04	.08	.22	-.08	-.20
	p	(.67)	(.57)	(.53)	(.07)	(.34)	(.06)
OI Congruence (FLHD)	*r*	.10	.12	.21	.23	.05	.08
	p	(.17)	(.08)	(.11)	(.08)	(.53)	(.35)
OI Congruence (C)	*r*	.12	.13	.13	***.29****	.13	.07
	p	(.08)	(.06)	(.33)	(.02)	(.12)	(.41)
OI Congruence (M)	*r*	.12	.07	***.39****	***.29****	.02	-0
	p.	(.08)	(.33)	(0)	(.02)	(.82)	(.77)

Note. MI Congruence (FLHD) = First letter Holland distance index for major-interest congruence. MI Congruence (C) = C index for major-interest congruence. MI Congruence (M) = M index for major-interest congruence. OI Congruence (FLHD) = First letter Holland distance index for occupation-interest congruence. OI Congruence (C) = C index for occupation-interest congruence. OI Congruence (M) = M index for occupation-interest congruence. Acculturation 1 = Vancouver Index of Acculturation scale (heritage dimension). Acculturation 2 = Vancouver Index of Acculturation scale (mainstream culture dimension).

**. $p < .01$
*. $p < .05$

Table B11

Mean Comparison of Occupation-interest Congruence Between Each Pair of American Acculturation Levels

Acculturation with American culture		FLHD index		C index		M index	
		Mean Difference (I-J)	*p*	Mean Difference (I-J)	*p*	Mean Difference (I-J)	*p*
(I) Acculturation	(J) Acculturation						
low	middle	***-1.36****	.03	-3.68	.19	-5.31	.56
	high	-1.21	.06	-3.46	.23	-4.15	.89
middle	low	***1.36****	.03	3.68	.19	5.31	.56
	high	.15	.95	.22	1	1.16	.94
high	low	1.21	.06	3.46	.23	4.15	.89
	middle	-.15	.95	-.22	1	-1.16	.94

* $p < .05$

Table B12

Correlation Results Between Occupation-interest Congruence and Three Variables Across Different Gender Groups

	Total (*n* =207)			Male (*n* = 62)			Female (*n* = 144)		
Measures	FLHD	C	M	FLHD	C	M	FLHD	C	M
Values									
Value 1	-.05	-.06	-.06	-.17	-.21	-.12	<.001	.01	-.03
Value 2	.04	.07	.07	.08	.16	**.26***	.03	.05	<-.001
Intergeneration conflict									
Conflict 1	.02	-.04	-.06	.03	-.07	-.13	.01	-.02	-.02
Conflict 2	-.02	-.06	-.06	-.09	-.21	-.18	.02	< .001	<.001
Conflict 3	-.07	-.11	-.10	**-.28***	***-.36***	***-.36***	.01	-.03	-.01
Family Obligation	.08	0.11	.12	.11	.19	***.41***	.07	.08	<.001
Perceived Opportunity	-.02	-.06	.02	-.14	-.16	-.11	.04	< -.001	.10

Note. Value 1 = parents' belief on career/major related value. Value 2 = students' belief on career/major related value. Conflict 1 = subscale of intergeneration conflict on career/major related value. Conflict 2 = general intergeneration conflict with severity measure. Conflict 3 = family acculturation conflict scale with severity measure.

* $p < .05$

** $p < .01$

Table B13

Correlation Results Between Occupation-interest Congruence and Three Variables Across RIASEC Occupations

	Social (*n*=53)			Enterprising (*n*=46)			Conventional (*n*=11)		
Measures	FLHD	C	M	FLHD	C	M	FLHD	C	M
Values									
Value 1	-.01	-.02	.05	.08	.02	.07	-.58	-.45	-.53
Value 2	.12	.07	.17	***.34****	***.36****	***.43****	.29	.54	.56
Intergeneration conflict									
Conflict 1	-.04	-.10	-.11	-.22	***-.33****	-.29	-.27	-.60	-.55
Conflict 2	.21	.03	.06	-.09	-.14	-.09	-.60	***-.70****	***-.80****
Conflict 3	< .001	<-.001	-.07	-.17	-.27	-.20	***-.64****	***-.86****	***-.66****
Family Obligation	.16	.22	***.35****	***.30****	.28	***.38****	-.14	.29	.27
Perceived Opportunity	.20	.19	.24	-.28	-.23	-.19	-.59	***-.63****	-.58

Note. Value 1 = parents' belief on career/major related value. Value 2 = students' belief on career/major related value. Conflict 1 = subscale of intergeneration conflict on career/major related value. Conflict 2 = general intergeneration conflict with severity measure. Conflict 3 = family acculturation conflict scale with severity measure.

* $p < .05$

** $p < .01$

Table B14

Correlation Results Between Occupation-interest Congruence and Three Variables Across RIASEC Majors

	Investigative (*n*=106)			Social (*n*=25)		
Measures	FLHD	C	M	FLHD	C	M
Values						
Value 1	***-.21****	***-.21****	***-.20****	.04	.08	.10
Value 2	-.13	-.09	-.06	.40	.33	.32
Intergeneration conflict						
Conflict 1	.10	.08	.04	***-.42****	-.34	-.34
Conflict 2	-.07	-.10	-.07	-.09	-.16	.03
Conflict 3	-.09	-.11	-.03	-.39	-.25	-.26
Family Obligation	-.05	-.05	-.03	.28	.29	.31
Perceived Opportunity	-.12	-.18	-.05	.07	.07	.13

Note. Value 1 = parents' belief on career/major related value. Value 2 = students' belief on career/major related value. Conflict 1 = subscale of intergeneration conflict on career/major related value. Conflict 2 = general intergeneration conflict with severity measure. Conflict 3 = family acculturation conflict scale with severity measure.

* $p < .05$

Table B15

Correlation Results Between Occupation-interest Congruence and Three Variables Across Parents' Education

	Parents educated in U.S. (*n*=104)			Parents not educated in U.S. (*n*=100)		
Measures	FLHD	C	M	FLHD	C	M
Values						
Value 1	-.03	-.03	-.04	-.09	-.12	-.07
Value 2	-.02	.04	.12	.14	.12	.04
Intergeneration conflicts						
Conflict 1	.07	-.02	-.08	-.07	-.09	-.05
Conflict 2	< -.001	-.03	-.02	-.19	***-.22****	-.16
Conflict 3	-.03	-.09	-.12	-.15	-.18	-.11
Family Obligation	.18	***.21****	***.28****	<.001	.02	< .001
Perceived Opportunity	.12	.08	.19	***-.21****	***-.26****	.18

Note. Value 1 = parents' belief on career/major related value. Value 2 = students' belief on career/major related value. Conflict 1 = subscale of intergeneration conflict on career/major related value. Conflict 2 = general intergeneration conflict with severity measure. Conflict 3 = family acculturation conflict scale with severity measure.

* $p < .05$

** $p < .01$

Appendix C

Pilot Study Questionnaire

How I choose my career/major

Following are some questions related to how you choose your current major or future career. Please briefly answer them.

1. What you want to do as your career? Why you want to do that?

2. Is your current major related to what you want to do?

3. What do your parents expect you to do as your career?

4. Does their expectations conflict with what you want to do?

5. If so, how you deal with such conflicts? (Will you insist on your ideas or you will follow what your parents expect you to do?)

6. Why you choose to deal with that conflict in this way?

7. Do you have other types of conflicts with your parents? If so, can you provide an example?

8. If you have conflicts with parents other than career related, will that conflict impact your career choice? If so, in what way it impacts your decision?

9. Do your parents involve in your career decisions?

10. If so, how they involve in your decisions?

Demographic Information

Directions. Please tell me about yourself by filling in the following information as completely as possible.	9b. If you were born outside the Unites States, please indicate how many years you have lived in the United

1. Age: _____

2. Gender: ___ Male ___ Female

3. Class Standing:

a. Freshman b. Sophomore
c. Junior d. Senior e. Grad

4. Academic Major (please specify major and department)

_____.

5a. Where you come from (e.g. Chicago, IL)?

_____

5b. What is/are your cultural heritage(s)? (e.g. Chinese, Korean, Filipino)

_____

6. What is your racial identity?

a. Asian/Asian American/Pacific Islander
b. Black/African American
c. Native American
d. Non-Hispanic White
e. Hispanic
f. Biracial/multiracial
g. Other (please specify _____)

7. Please specify your ethnicity (i.e., Puerto Rican, Chinese, Indian).

_____.

9a. What is your generation status
a. First generation (was born outside the United States and come to U.S. after 16)
b. 1.5 generation (was born outside the United States and come to U.S. after 5)
c. Second generation (was born in U.S., but parents are first or 1.5 generation)
d. Third generation or beyond

States.

_____.

10. The number of siblings you have.

a. I am the only child
b. 2 or less
c. 3 to 5
d. 6 or more

11a. Did your parents get education in American education system?

Yes No

11b. If your answer is yes for 12a, please indicate what education your parents obtained in American education system, and how many years?

_____

12. Please indicate your guardians' household income:

a. $19,000 or less
b. $20,000 to $39,000
c. $40,000 to $59,000
d. $60,000 to $79,000
e. $80,000 and above

Thank you for your responses!

Appendix D

Questionnaire

Informed Consent to Participate in Research

You are invited to participate in a research project on family's impact on Asian American's career decisions. The purpose of this project is to help career counselors better understand Asian American clients' career behaviors, thoughts, and concerns on choosing majors and careers. The results of current study may be presented in conferences and/or submitted to psychology journals. The Responsible Project Investigator for this project is Prof. James Rounds (Department of Educational Psychology, University of Illinois at Urbana Champaign).

Anyone over age 18 who identifies him/herself as Asian American is welcome to participate. Individuals who identify themselves as Asian (e.g., Asian international students, Asian immigrants who do not have parents with them in the U.S. or have lived in the U.S. for less than 8 years) will not be the target participants for this study because the present study focuses on Asian American college students who have been raised through their adolescent years under two cultures.

In this project, you will be asked to complete a questionnaire measuring your attitude towards different activities and your experience of interacting with your parents. The estimated completion of the survey is approximately 40 minutes. You will receive one hour of research credit for completing the questionnaire if you are either in the Psychology 100 subject pool or Educational Psychology Subject Pool at UIUC.

Your responses will be kept completely confidential. Your email will be collected at the beginning of the questionnaire, and it is collected only for the purpose of granting research credits. Once the research credit has been granted to you, your email address will be deleted. If you don't need any research credits, you do not need to provide your email. Also, your parent/guardian's phone number or email account or mailing address will be asked at the end of the study. Providing this information is optional. Once you provide this information, your parents/guardians will be contacted to complete a short survey about their expectations toward your career development. It will take about 5 minutes for your parents/guardians to complete the survey. Whether or not you grant your permission for the researcher to contact your parents will not impact you to get your research credits.Your online response will be confidentially stored in a data set. The data will be stored in a password protected computer in a locked office. Only investigators can access to this data.

Your participation in this research is completely voluntary. Your choice to participate or not will not impact your status at the university or your grades in classes. Completing this questionnaire may cause you to reflect on your attitude toward some activities and your feelings about yourself, your thoughts, behaviors, past experiences of interacting with your parents. It is possible that answering some questions may remind you of some negative feelings. You have the right to refuse to participate in this project without penalty. In addition, if at any point you wish to stop participating, you may do so without penalty.

If you have any questions later, please contact Xuhua Qin at xuhua.qin09@gmail.com . If you have questions about your rights as a research participant you may contact the University of Illinois Institutional Review Board at (217) 333-2670 (collect calls are accepted), or by email at irb@uiuc.edu.

By clicking on the "Begin Survey" button, you confirm that: a) you understand the above information and voluntarily consent to participate in the research project described above, and b) you identify yourself as Asian American, and c) you are 18 years or older.

You may print and keep a copy of this consent form.

Completing this survey signifies your consent.

If you are willing to participate in the study described above, please click on the “Begin Survey” button.

NEXT

Interest Profile Short Form

*The following items are designed to help you explore your vocational interests by rating the extent to which you would like to do certain activities. To complete these items, circle the number that most closely represents **how you feel** about each of the activities.*

Strongly Dislike	**Dislike**	**Neutral**	**Like**	**Strongly Like**
1	**2**	**3**	**4**	**5**

1	Build kitchen cabinets	1	2	3	4	5
2	Teach an individual an exercise routine	1	2	3	4	5
3	Buy and sell stocks and bonds	1	2	3	4	5
4	Manage a retail store	1	2	3	4	5
5	Develop a spreadsheet using computer software	1	2	3	4	5
6	Proofread records or forms	1	2	3	4	5
7	Lay brick or tile	1	2	3	4	5
8	Help people with personal or emotional problems	1	2	3	4	5
9	Operate a beauty salon or barber shop	1	2	3	4	5
10	Monitor a machine on an assembly line	1	2	3	4	5
11	Repair household appliances	1	2	3	4	5
12	Write books or plays	1	2	3	4	5
13	Play a musical instrument	1	2	3	4	5
14	Teach children how to read	1	2	3	4	5
15	Load computer software into a large computer network	1	2	3	4	5
16	Study ways to reduce water pollution	1	2	3	4	5
17	Give career guidance to people	1	2	3	4	5
18	Raise fish in a fish hatchery	1	2	3	4	5
19	Compose or arrange music	1	2	3	4	5
20	Operate a calculator	1	2	3	4	5
21	Assemble electronic parts	1	2	3	4	5
22	Drive a truck to deliver packages to offices and homes	1	2	3	4	5
23	Perform rehabilitation therapy	1	2	3	4	5
24	Do volunteer work at a non-profit organization	1	2	3	4	5
25	Conduct chemical experiments	1	2	3	4	5
26	Draw pictures	1	2	3	4	5
27	Create special effects for movies	1	2	3	4	5

28	Teach sign language to people with hearing disabilities	1	2	3	4	5
29	Manage a department within a large company	1	2	3	4	5
30	Keep shipping and receiving records	1	2	3	4	5
31	Study the movement of planets	1	2	3	4	5
32	Help conduct a group therapy session	1	2	3	4	5
33	Calculate the wages of employees	1	2	3	4	5
34	Examine blood samples using a microscope	1	2	3	4	5
35	Investigate the cause of a fire	1	2	3	4	5
36	Paint sets for plays	1	2	3	4	5
37	Start your own business	1	2	3	4	5
38	Negotiate business contracts	1	2	3	4	5
39	Inventory supplies using a hand-held computer	1	2	3	4	5
40	Design sets for plays	1	2	3	4	5
41	Represent a client in a lawsuit	1	2	3	4	5
42	Develop a way to better predict the weather	1	2	3	4	5
43	Work in a biology lab	1	2	3	4	5
44	Write scripts for movies or television shows	1	2	3	4	5
45	Market a new line of clothing	1	2	3	4	5
46	Test the quality of parts before shipment	1	2	3	4	5
47	Invent a replacement for sugar	1	2	3	4	5
48	Perform jazz or tap dance	1	2	3	4	5
49	Take care of children at a day-care center	1	2	3	4	5
50	Sell merchandise at a department store	1	2	3	4	5
51	Record rent payments	1	2	3	4	5
52	Repair and install locks	1	2	3	4	5
53	Manage a clothing store	1	2	3	4	5
54	Keep inventory records	1	2	3	4	5
55	Set up and operate machines to make products	1	2	3	4	5
56	Do laboratory tests to identify diseases	1	2	3	4	5
57	Study weather conditions	1	2	3	4	5
58	Edit movies	1	2	3	4	5
59	Teach a high-school class	1	2	3	4	5
60	Stamp, sort, and distribute mail for an organization	1	2	3	4	5

In this section, you will read descriptions about six different sets of interests that many people have. Individuals can have an interest in certain things even if they are not

*necessarily good at all the activities. Please rate each of the following descriptions according to **how much you like** each set of descriptions.*

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1	**2**	**3**	**4**	**5**

1	• Interested in building and repairing activities. • Enjoy jobs that produce tangible results, such as technology and engineering.	1	2	3	4	5
2	• Interested in science (gathering information, uncovering new facts or theories, and analyzing or interpreting data) • Might enjoy careers such as medicine, mathematics, and psychology.	1	2	3	4	5
3	• Interested in self-expression and activities that are associated with the arts, both in leisure activities as well as in vocational activities or environments. • Might enjoy careers such as music, writing, and interior decorating.	1	2	3	4	5
4	• Interested in helping people and prefer to solve problems through interacting with others. • Might enjoy careers such as teaching, counseling, social work.	1	2	3	4	5
5	• Interested in persuading others and seeking positions of leadership. • Might enjoy careers such as marketing, business, and management.	1	2	3	4	5
6	• Interested in activities that require attention to detail, accuracy and organization. • Might enjoy careers such as accounting, computer systems analysis.	1	2	3	4	5

Vancouver Index of Acculturation

Please answer following questions as carefully as possible by CIRCLING ONE of the numbers to the right of each question to indicate your degree of agreement or disagreement.

Many of these questions will refer to your HERITAGE CULTURE, meaning the culture that has influenced you the most (other than mainstream American culture). It may be the culture of your birth, the culture in which you have been raised, or another culture that forms part of your background. If there are several such cultures, pick the one that has influenced you the MOST (e.g., Irish, Chinese, Mexican, Black). If you do not feel that you have been influenced by any other culture, please try to identify a culture that may have had an impact on previous generations of your family.

Please write your HERITAGE CULTURE in the space provided. _____

Use the following key to help guide your answers:

Strongly Disagree		**Disagree**		**Neutral/ Depends**		**Agree**		**Strongly Agree**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

1. I often participate in my *heritage* cultural traditions……...	1	2	3	4	5	6	7	8	9
2. I often participate in mainstream American cultural traditions……..	1	2	3	4	5	6	7	8	9
3. I would be willing to date a person from my *heritage* culture……..	1	2	3	4	5	6	7	8	9
4. I would be willing to date a mainstream American……	1	2	3	4	5	6	7	8	9
5. I enjoy social activities with people from the same *heritage* culture as myself…….	1	2	3	4	5	6	7	8	9
6. I enjoy social activities with typical mainstream Americans……..	1	2	3	4	5	6	7	8	9
7. I am comfortable working with people of the same *heritage* culture as myself…….....	1	2	3	4	5	6	7	8	9
8. I am comfortable working with typical mainstream Americans……..	1	2	3	4	5	6	7	8	9
9. I enjoy entertainment (e.g., movies, music) from my *heritage* culture……..	1	2	3	4	5	6	7	8	9
10. I enjoy mainstream American entertainment (e.g., movies, music)…….	1	2	3	4	5	6	7	8	9

11. I often behave in ways that are typical of my *heritage* culture……	1	2	3	4	5	6	7	8	9

Strongly Disagree		**Disagree**		**Neutral/ Depends**		**Agree**		**Strongly Agree**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

12. I often behave in ways that are typically mainstream American……	1	2	3	4	5	6	7	8	9
13. It is important for me to maintain or develop the practices of my *heritage* culture……...	1	2	3	4	5	6	7	8	9
14. It is important for me to maintain or develop mainstream American cultural practices……...	1	2	3	4	5	6	7	8	9
15. I believe in the values of my *heritage* culture……	1	2	3	4	5	6	7	8	9
16. I believe in mainstream American values….	1	2	3	4	5	6	7	8	9
17. I enjoy the jokes and the humor of my *heritage* culture……..	1	2	3	4	5	6	7	8	9
18. I enjoy typical mainstream American jokes and humor…….	1	2	3	4	5	6	7	8	9
19. I am interested in having friends from my *heritage* culture…….	1	2	3	4	5	6	7	8	9
20. I am interested in having mainstream American friends……..	1	2	3	4	5	6	7	8	9

Asian American Family Impact Scale

Asian American Intergeneration Conflict Item Pool

The following items are designed to explore how your family impacts you on choosing your majors/careers. To complete these items, circle the number that most closely represents ***the degree you think your parents would agree with the statement, and the degree you agree with the statement.*** *Read each statement and answer the following questions using the following rating scales:*

Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**

	My parents believe that: Strongly Disagree ... Strongly Agree	I believe that: Strongly Disagree ... Strongly Agree
1. Succeeding occupationally is an important way of making your family proud.	1…..2…..3…..4…..5	1…..2…..3…..4…..5
2. Getting into a good school reflects well on your family.	1…..2…..3…..4…..5	1…..2…..3…..4…..5
3. Failing academically brings shame to your family	1…..2…..3…..4…..5	1…..2…..3…..4…..5
4. You should go as far as you can academically and professionally on behalf of your family	1…..2…..3…..4…..5	1…..2…..3…..4…..5
5. Your academic and occupational reputation reflects on the family's reputation.	1…..2…..3…..4…..5	1…..2…..3…..4…..5
6. It is an important way to show your appreciation for your family by succeeding in school and work.	1…..2…..3…..4…..5	1…..2…..3…..4…..5
7. It is your duty to bring honor through achievements to your family.	1…..2…..3…..4…..5	1…..2…..3…..4…..5
8. You should work hard so that you won't be a disappointment to your family.	1…..2…..3…..4…..5	1…..2…..3…..4…..5
9. You should bring respect to family by having a high prestige job.	1…..2…..3…..4…..5	1…..2…..3…..4…..5
10. You should secure family's financial	1…..2…..3…..4…..5	1…..2…..3…..4…..5

status by choosing a well paid occupation.		

The following questions describe situations that your parents may have different ideas than yours. To complete these items, circle the number that most closely represents ***how often your parents and you have different ideas and how serious such conflicts are between your parents and you on following issues.*** *Please answer the following questions using the following rating scales:*

How often do you have different ideas?

1	2	3	4	5
Almost never	**Once in a while**	**Sometimes**	**Often or frequently**	**Almost always**

How serious are such conflict in your family?

1	2	3	4	5
Not at all	**Slightly**	**Moderately**	**Very much**	**Extremely**

	How often do you have different ideas on following issues? Never always	How serious are such conflicts in your family? Not at all extremely
11. How much time to spend on studying	1…..2…..3…..4…..5	1…..2…..3…..4…..5
12. How much time to spend on recreation	1…..2…..3…..4…..5	1…..2…..3…..4…..5
13. How much time to spend on sports	1…..2…..3…..4…..5	1…..2…..3…..4…..5
14. How much time to spend on practicing music	1…..2…..3…..4…..5	1…..2…..3…..4…..5
15. Importance of academic achievement	1…..2…..3…..4…..5	1…..2…..3…..4…..5
16. Emphasis on materialism and success	1…..2…..3…..4…..5	1…..2…..3…..4…..5
17. Which school to attend	1…..2…..3…..4…..5	1…..2…..3…..4…..5
18. What to major in college	1…..2…..3…..4…..5	1…..2…..3…..4…..5
19. Which career to pursue	1…..2…..3…..4…..5	1…..2…..3…..4…..5
20. How much time to help out in the family business	1…..2…..3…..4…..5	1…..2…..3…..4…..5

Family Obligation Item Pool

The following questions ask about your feeling toward your family. Please rate ***how much you agree with each of the following statements*** *using the following rating scales:*

Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**

21. I feel obligated to follow my parent's ideas about the choice of majors/careers	1	2	3	4	5
22. I feel it is my duty to achieve financial success to raise my family's social status in the society	1	2	3	4	5
23. I feel like I owe my parents because they have sacrificed a lot for me	1	2	3	4	5
24. I feel obligated to keep peace in the family	1	2	3	4	5
25. I feel that I need to do things to please my parents	1	2	3	4	5
26. I feel that I need to make my parents proud	1	2	3	4	5
27. I feel that I must not argue with my parents	1	2	3	4	5
28. I feel that I have to take my parents' advice	1	2	3	4	5

Perceived Opportunities Item Pool

*The following questions ask about your perception of working opportunities in society. Please rate **how much you agree with each of following statements** using the following rating scales:*

Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**

29. I feel that I have fewer career options than students of other races.	1	2	3	4	5
30. I can only succeed in a small number of majors/careers.	1	2	3	4	5
31. I have more chances to succeed if I enter the same occupation as my parent's occupation.	1	2	3	4	5
32. I feel that my career opportunities are limited by my ethnicity/race/language	1	2	3	4	5
33. I have opportunities to succeed in almost any major/career that I choose.	1	2	3	4	5

Demographic Information

Directions. Please answer the questions on this page as completely as possible.

1. Age: _____

2. Sex: ___ Male ___ Female

3. Class Standing:

   a. Freshman b. Sophomore
   c. Junior d. Senior e. Graduate student

4. Have you declared your major? Yes No

5. What is your academic major (please specify major and department). If undecided, please list possible major(s). _____.

6. What occupation do you want to pursue after graduation?

   _____

7. What occupation do your parents/guardian want you to pursue after graduation?

   _____

8. What is your racial identity? (check all that applied)

   a. Asian/Asian American
   b. Black/African American
   c. Native American
   d. Non-Hispanic White
   e. Hispanic
   f. Other (please specify _____)

9. Please specify your cultural & ethnic heritage(s) (i.e., Chinese, Korean, Indian).

   _____.

10. What is your generation status?
    a. First generation (was born outside the United States and came to U.S. after age 16)
    b. 1.5 generation (was born outside the United States and came to U.S. after age 5)
    c. Second generation (was born in U.S., but one or both parents are first or 1.5 generation)
    d. Third generation or beyond (was born in US, parents were born in US as well)

11. If you were born outside the Unites States, please indicate how many years you have lived in the United States.

    _____.

12. How many siblings do you have?

    a. 0
    b. 1 or 2
    c. 3 to 5
    d. 6 or more

13. Did your mother or father obtain their education in the American education system?

    Yes No

14. If your answer is yes for 13, please indicate what education your parent(s) obtained in American education system, and for how many years?

    _____

    _____

15. What are your parents' occupations? (Please be specific. For example, rather than writing "self-employed" or "business owner," specify "owns a convenience shop" rather than "a lawyer," write "law firm partner")

    Mother _____

    Father _____

Thank you for your responses!